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ABSTRACT

This publication is a catalog that contains the National Audiovisual Center's materials on Science. There are twelve areas in this catalog: Aerospace Technology, Astronomy, Biology, Chemistry, Electronics and Electricity, Energy, Environmental Studies, Geology, Mathematics and Computer Science, Oceanography, Physics, and Weather/Meteorology. Each area is subdivided into many titles, and each entry contains all the information pertinent to the particular title. Rental and purchase policies are stated at the end, together with a producer/sponsor codes list. A title index is also supplied. (GA)

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ED158968

National
AudioVisual
Center

U.S. DEPARTMENT OF HEALTH,
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NATIONAL INSTITUTE OF
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SE 024 455

A Select List of U.S. Government Produced Audiovisual Materials-1978

SCIENCE...

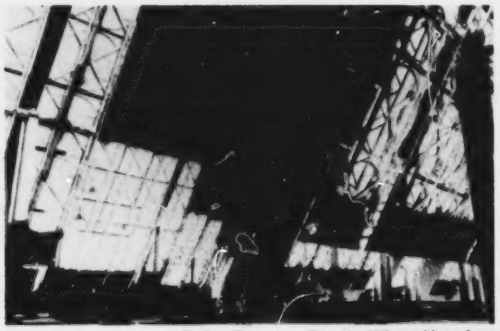
Science in the Seventies
See page 15.

National Science Foundation (NSF)

Generally acknowledged as one of the Nation's most prestigious scientific organizations, NSF promotes the progress of science through the support of research and education in the sciences—with special emphasis toward an increased understanding of the fundamental laws of nature, upon which man's well-being depends.

Included in the Center's collection of Government produced films is a selection of NSF films representing the Foundation's basic guidelines for research by pure and applied scientists.

TO POWER MAN'S PROGRESS



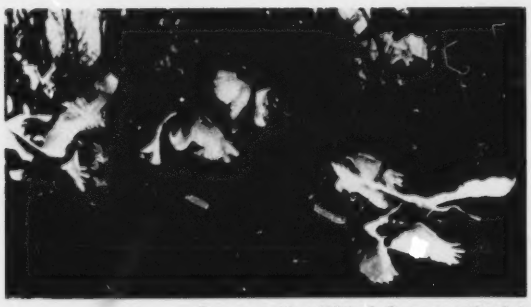
Solar Energy, Ready When You Are
See page 22.

Department of Energy (DOE)

Newly organized, DOE brings into focus all the energy programs of the Federal Government concerned with the critical scientific issue of our time—energy.

Included in this catalog are audiovisual programs produced by the Federal Energy Administration, the Energy Research and Development Administration, and its predecessor, the Atomic Energy Commission, that explore in depth the new energy technology—nuclear, fossil, solar, geothermal and advanced systems—that will eventually enable the Nation to meet our energy requirements.

IN OUR WORLD



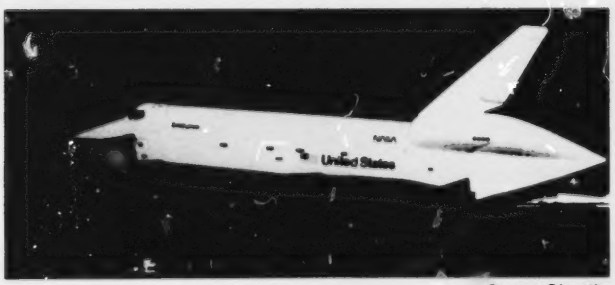
Conversation With A Conservationist
See page 28.

National Park Service (NPS)

The National Park Service is known to millions of Americans as guardian of natural wonders, historic monuments, and recreational areas. But the Service's commitment to the Nation is, in fact, much more than a custodial one: it has produced exceptional and diverse groups of award-winning films that are extremely useful to educational audiovisual programs.

Among these are the earth science films included in this catalog—appropriate for use in schools and public libraries—that observe in detail the awesome physical processes that have carved and shaped our Earth and have clothed it with plant and animal life.

AND BEYOND



Space Shuttle
See page 9.

National Aeronautics and Space Administration (NASA)

During the last two decades NASA's outstanding series of scientific accomplishments that has included the first manned expeditions into space—onto the Moon and beyond, has turned the eyes of the world toward the heavens with new understanding.

The National AudioVisual Center is particularly proud to include a comprehensive program of NASA produced films, documenting America's achievements and discoveries, in this catalog. From the history of flight to space age navigation—from physics to biology—something for use in almost every scientific field.

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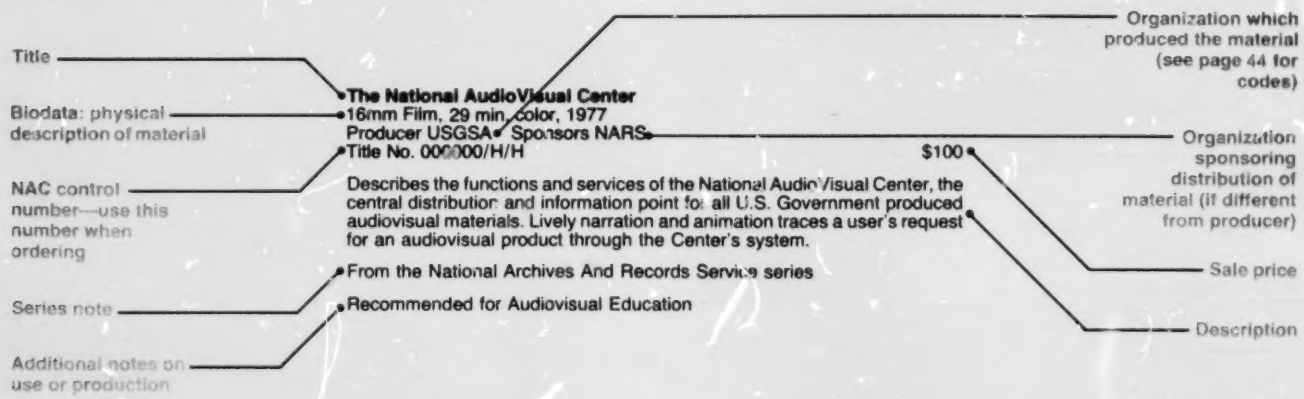
How to Use the Catalog

The National AudioVisual Center's materials on SCIENCE are presented in this catalog under the science headings outlined in the Table of Contents. There are 12 areas, from Aerospace Technology to Weather/Meteorology. For easy access, if the title is known, consult the alphabetical Title Index in the back of the catalog to find the page(s) on which the entry appears.

The entry contains all the information pertinent to a particular title. The example below details the components of an individual title entry.

Example:


Title
Biodata: physical description of material
NAC control number—use this number when ordering
Series note
Additional notes on use or production
The National AudioVisual Center
16mm Film, 29 min, color, 1977
Producer USGSA Sponsors NARS
Title No. 000000/H/H
Describes the functions and services of the National AudioVisual Center, the central distribution and information point for all U.S. Government produced audiovisual materials. Lively narration and animation traces a user's request for an audiovisual product through the Center's system.
From the National Archives And Records Service series
Recommended for Audiovisual Education
Organization which produced the material (see page 44 for codes)
Organization sponsoring distribution of material (if different from producer)
$100
Sale price
Description

All 16mm motion pictures are optical sound unless otherwise indicated.

Aerospace Technology 1

History

Within This Decade: America in Space
16mm Film, 29 min, color, 1969
Producer USNASA
Title No. 003895/HH $168.25
This film traces the principal accomplishments of NASA in aeronautics and space research from 1959 until the eve of the first lunar landing. Emphasis is placed on the progressive experience gained on each manned Apollo mission.

Anatomy of a Triumph
16mm Film, 30 min, color, 1970
Producer USCSA
Title No. 134444/HH $174.00
Documents man's attempts to fly—from the Wright Brothers' Kitty Hawk flight to the Apollo 11 walk on the Moon. Contains footage of the Wright Brothers, Lindbergh, Rickenbacker, Goddard, Von Braun, Hitler, astronauts in the Mercury, Gemini, and Apollo programs, and Yuri Gagarin's epic voyage into space.

Before Saturn
16mm Film, 14 min, color, 1962
Producer USNASA
Title No. 166825/HH $81.25
Presents a short history of the philosophical and fictional dreams of space exploration, from the early Chinese through the Greek period to the development of the Saturn I rocket.

Blue Planet
16mm Film, 11 min, color, 1972
Producer USNASA
Title No. 000223/HH $63.75
An overview of the space program featuring the highlights of America's role in space exploration. It visually portrays a composite lunar landing mission and a few of the key benefits that we are realizing from unmanned missions. The film ran as a theatrical short subject for two years beginning at the Radio City Music Hall, New York. Narrated by Burgess Meredith.
Awards: U.S. Industrial Film Festival; Golden Eagle Certificate, Council on International Nontheatrical Events (CINE).

The Clouds of Venus
16mm Film, 30 min, color, 1962
Producer USNASA
Title No. 228050/HH $174.00
A documentary of the flight of Mariner II, which was launched on Aug. 27, 1962, our first effort to obtain scientific data of Venus from an unmanned spacecraft passing by the planet. Shows the position of Venus within our solar system and some of its features. Presents the flight profile, trajectory, spacecraft features, and the experiments conducted throughout 109 days and 180 million miles of travel. A few preliminary findings are summarized.

The Dream That Wouldn't Down
16mm Film, 27 min, b/w, 1965
Producer USNASA
Title No. 279650/HH $89.00
The dream of Dr. Robert Goddard, the father of modern rocketry, is explored and examined through reminiscences of Mrs. Goddard. Included are historic scenes of Dr. Goddard's early experiments and the personal commentary of Mrs. Goddard.

Echo In Space—Communication Milestone
16mm Film, 14 min, color, 1961
Producer USNASA
Title No. 286390/HH $130.25
Describes the first establishment of communications in outer space by the satellite Project Echo, in 1960.

The Flight of Faith 07
16mm Film, 28 min, color, 1963
Producer USNASA
Title No. 000605/HH $162.50
The story of the last flight in the one-man Project Mercury series. The film follows Astronaut Gordon Cooper from preflight training through the launching, Earth orbital flight, and recovery.

Flight Without Wings
16mm Film, 14 min, color, 1969
Producer USNASA
Title No. 331910/HH $81.25
Traces the development of the wingless lifting body, and relates it to space shuttles which will return men from Earth orbit to landings on conventional runways. The film includes on-board photography during test flights of the HL-10 and other lifting bodies.
Awards: Silver Medal International Film and TV Festival, New York; Gold Medal, Atlanta International Film Festival, 1970; Silver Statuette, Industry Film Producer's Association, 1970.

The Four Days of Gemini 4
16mm Film, 28 min. color, 1965
Producer USNASA
Title No. 340750/HH $162.50
Documents the first extravehicular activity or "walk in space" by an American astronaut during the Gemini 4 mission. Details of the Gemini space suit and a "space gun" propulsion system are shown, as well as the mission activities of Astronauts White and McDivitt.

4 RMS-Earth View
16 mm Film, 28 min, color, 1975
Producer USNASA
Title No. 009611/HH $162.50
Skylab was the first United States manned space station. This is the story of the three missions, the nine astronauts, and their 171 days in the manned laboratory. Criss-crossing 70 per cent of Earth's land area, Skylab's sensors gathered information about many features of the planet. Actor E. G. Marshall is host and moderator.
Awards: Silver Medal, International Film and TV Festival, New York; Golden Eagle, Council on International Non-theatrical Events (CINE).

Freedom 7
16mm Film, 29 min, color, 1961
Producer USNASA
Title No. 344200/HH $168.25
The first American manned space mission is the subject of this film. The training, preparation, launching and recovery of Astronaut Shepard for this first Project Mercury suborbital flight are included.

Friendship 7
16mm Film, 58 min, color, 1962
Producer USNASA
Title No. 346650/HH $336.50
An historical documentary which illustrates in detail the first American orbital space flight by Astronaut John Glenn in 1962. The film also provides background on Project Mercury and the tracking network planned for the one-man Mercury missions.

Jupiter Odyssey
16mm Film, 28 min, color, 1974
Producer USNASA
Title No. 009092/HH $162.50
This is the story of the 620-million-mile journey of Pioneer 10 to the planet Jupiter. During the 21-month trip to Jupiter, Pioneer penetrated the previously unexplored asteroid belt without mishap. After leaving the Jovian system of the huge planet with its 12 orbiting satellites, Pioneer is on a course that will cause the spacecraft to leave our solar system and wander endlessly through our Milky Way Galaxy, carrying a message for possible extraterrestrial beings.
Awards: Golden Eagle, Council on International Non-theatrical Events (CINE) 1975.

Kites to Capsules
16mm Film, 5 min, color, 1969
Producer USNASA
Title No. 002493/HH $29.00
Displays the advancement of aviation from early kites to modern space travel as depicted in the Federal Aviation Administration's participation in the Paris Air Show of 1969.

Legacy of Gemini
16mm Film, 28 min, color, 1967
Producer USNASA
Title No. 002516/HH $162.50
In the perspective of a single composite mission, this documentary illustrates the major accomplishments of the Gemini two-man space flights and the significance of these flights to the Apollo Program. The film includes outstanding photography of the Earth and man in space.
Awards: Golden Eagle, Council on International Non-theatrical Events (CINE), 1968 • Silver Medal, Atlanta International Film Festival, 1968 • Chris Award, Columbus Film Festival, 1968 • Award of Merit, American Film Festival, 1968.

Lunar Landing—The Mission of Surveyor 1
16mm Film, 16 min, color, 1967
Producer USNASA
Title No. 493272/HH $92.75
Shows the launching and the method by which photographs were received.

A Man's Reach Should Exceed his Grasp
16mm Film, 24 min, color, 1972
Producer USNASA
Title No. 002124/HH $139.25
The story of flight and of man's reach for a new freedom through aviation and the exploration of space. From the Wright Brothers flight at Kitty Hawk to the landing on the Moon and future missions to the planets, the film depicts the fulfillment of the ancient dream of flight. Through the use of multiple images, the creative role of research is emphasized. Voices of scientists and statements by writers, poets and philosophers document man's search for knowledge. The film is narrated by Burgess Meredith.
Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE) • Certificate of Creative Excellence, U.S. Industrial Film Festival • 1st Prize—International Festival of Aeronautics and Space Films, Paris • Silver Phoenix, Atlanta International Film Festival.

The Mastery of Space
16mm Film, 58 min, color, 1962
Producer USNASA
Title No. 002353/HH $336.50
This historical documentary traces the development of Project Mercury through the sub-orbital flight of Astronaut Shepard in Freedom 7 and the orbital flight of Astronaut Glenn in Friendship 7. These first manned space flights are related to the later missions which would take man to the Moon.
Awards: Cindy Award, Industrial Film Producer's Association Festival, 1963 • Silver Medal, International Festival of Mountain Climbing and Exploration Films • Silver Medal, International Exhibition of Films for Children, Venice • Chris Statuette, Columbus Film Festival.

Research Project X-15
16mm Film, 27 min, color, 1966
Producer USNASA
Title No. 003275/HH $156.50
Shows the development of the experimental X-15 research airplane which took test pilots to the edge of space. Dramatic photography of flights of the X-15 and landings on the dry lake beds of California is included.

Satellite Astronomy—Progress and Promise
16mm Film, 17 min, color, 1969
Producer USNASA
Title No. 003333/HH $98.50
Reviews principal results of unmanned satellite exploration of the Moon, near planets, and the stars during the past decade. Describes studies proposed for the 1970's.

Small Steps—Giant Strides
16mm Film, 29 min, color, 1973
Producer USNASA
Title No. 004566/HH $168.25
The film was produced to honor the 15th Anniversary of the National Aeronautics and Space Administration, 1958-73. It visually portrays the historic accomplishments during the period, and how we have benefited from the new technology developed. Narrated by Isaac Asimov.

Space Exploration
Sound Filmstrips, color, 1967
Producer USNASA

■ **In Sight of the Giant Steps**
40 fr filmstrip, audiotape, guide
Title No. 002263/HH $12.50
Through the paintings and sketches of leading contemporary American artists, this filmstrip tells the story of space exploration. Produced with assistance from the National Gallery of Art.

■ **Reach for the Moon and Touch a Star**
40 fr filmstrip, audiotape, guide
Title No. 002175/HH $12.50
Produced in cooperation with the National Art Education Association; presents the story of space exploration through the paintings and sketches of leading American artists.

Space in the 70's—Man in Space—The Second Decade
16mm Film, 28 min, color, 1971
Producer USNASA
Title No. 502325/HH $162.50
Reviews the achievements of manned space flight during its first decade, and shows the programs for manned flight during the 1970's. Closes with possible future space programs beyond the 1980's.

Over 10,000 Titles . . .

in medicine, allied health, dentistry, safety, social sciences, education, industrial/vocational, and other subjects produced by the United States Government are also available for sale and rental from the Center.

For free information, write:

National AudioVisual Center
National Archives and Records Service
General Services Administration
Reference Section HH
Washington, DC 20409

or call: (301) 763-1896

Steps to Saturn
16mm Film, 23 min, color, 1962
Producer USNASA
Title No. 712760/HH $133.50
Documents the historic change from rocket weaponry to rocket space vehicles. Features the decision of President Kennedy to set the manned Moon flight as a national goal.

Tiros Experimental Weather Satellite
16mm Film, 14 min, color, 1960
Producer USNASA
Title No. 002626/HH $81.25
Depicts the preparation and launch of the rocket vehicle and payload of Tiros I.

The Apollo 04 Mission
16mm Film, 16 min, color, 1968
Producer USNASA
Title No. 141360/HH $92.75
The story of the assembly and launching of the first unmanned Apollo/Saturn V space vehicle. Shows detail of the stage separation, acceleration to an altitude of 11,232 miles above Earth, and effects of reentry on the unmanned Apollo command module at a speed of approximately 40,000 kilometers (25,000 miles) an hour.

The Flight of Apollo 07
16mm Film, 14 min, color, 1968
Producer USNASA
Title No. 331590/HH $81.25
A report on the first manned mission in the Apollo series. Major events covered are the launching; rendezvous and docking maneuvers; television transmissions; reentry and recovery.

Debrief—Apollo 08
16mm Film, 28 min, color, 1969
Producer USNASA
Title No. 001513/HH $162.50
The story of man's first journey in orbit around the Moon with comments on the significance of the Apollo 8 flight by several prominent Americans. The film features photography of the lunar surface, the Earth as seen from the Moon, and the on-board activities of Astronauts Borman, Lovell and Anders.
Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE); Bronze Medal, Atlanta Film Festival.

Apollo 09—The Space Duet of Spider and Gumdrop
16mm Film, 28 min, color, 1969
Producer USNASA
Title No. 141371/HH $162.50
An introspective view of the Apollo 9 Astronauts, McDivitt, Scott and Schweickart, before, during, and after their Earthorbital mission. With minimal narration and special music, the film concentrates on the launching; rendezvous and docking of the command module (Gumdrop) and the lunar module (Spider); and the return and recovery of the crew.

Apollo 10—Green Light For A Lunar Landing
16mm Film, 29 min, color, 1969
Producer USNASA
Title No. 141373/HH $168.25
Features highlights of the second lunar orbital mission by Astronauts Stafford, Cernan and Young, including docking and descent of the lunar module within 16 kilometers (10 miles) of the lunar surface. This mission, which was a "dress rehearsal" for the first lunar landing, provided good views of the Moon and the Earth.
Awards: Chris Statuette, Columbus Film Festival.

Eagle Has Landed—The Flight of Apollo 11
16mm Film, 29 min, color, 1969
Producer USNASA
Title No. 283390/HH $168.25

The story of the historic first landing of men on the Moon in July, 1969. Depicts the principal highlight events of the mission from launching through post-recovery activities of astronauts Armstrong, Aldrin, and Collins. Through television, motion picture, and still photography, the film provides an "eyewitness" perspective of the Apollo 11 mission.

Awards: Certificate of Exhibition, Edinburgh Film Festival; Certificate of Merit, American Science Film Association; Gold Camera, U.S. Industrial Film Festival, 1970; Ionosphere Award, Avanta International Film Festival, 1970.

Apollo 12—Pinpoint for Science
16mm Film, 28 min, color, 1969
Producer USNASA
Title No. 141375/HH $162.50

Emphasizing the scientific studies involved and the pinpoint accuracy of the landing, the film documents the second manned lunar landing. Highlights of this mission flown by astronauts Conrad, Gordon, and Bean include the placement of scientific equipment on the Moon; inspection of an unmanned Surveyor spacecraft landed on the Moon in 1967; collection of soil and rock samples; and extensive photography.

Awards: Golden Missile, Rassegna, Italy, 1970; Golden Eagle Certificate, Council on International Non-theatrical Events (CINE), 1970; Certificate of Honor, International Exhibition of Scientific Films, Buenos Aires, 1970.

Apollo 13—Houston, We've Got A Problem
16mm Film, 29 min, color, 1970
Producer USNASA
Title No. 141380/HH $168.25

The dramatic fight to return the crewmen of the Apollo 13 mission safely to Earth following an explosion on board the service module. Emphasizes Mission Control and spacecraft teamwork in overcoming the life-or-death problems of Apollo 13 as well as worldwide reaction to the crisis.

Awards: U.S. Industrial Film Festival, 1971.

Apollo 14—Mission to Fra Mauro
16mm Film, 29 min, color, 1971
Producer USNASA
Title No. 141370/HH $168.25

A factual documentary account of the mission. The film includes problems encountered on the way to the Moon and how they were solved. It then depicts the activities during the scientific and geological traverses on the Moon, and the return journey to Earth.

Awards: Chris Certificate, Columbus Film Festival; Golden Eagle Certificate, Council on International Non-theatrical Events (CINE).

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Apollo 15—In the Mountains of the Moon
16mm Film, 28 min, color, 1971
Producer USNASA
Title No. 141300/HH $162.50

Story of the highly successful 4th lunar landing mission. Includes details of the three lunar surface scientific expeditions, the experiments in lunar orbit, and the dramatic return to Earth.

Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE), 1972; Chris Award, 20th Annual Columbus Film Festival, 1972.

Apollo 16—Nothing So Hidden
16mm Film, 28 min, color, 1972
Producer USNASA
Title No. 001989/HH $162.50

The film is a visual documentary account of the Apollo 16 lunar landing mission, and exploration in the highland region of the Moon, near the crater Descartes. Through the use of cinema verité techniques, the real time anxieties and lighter moments of the support teams were captured in Mission Control and the Science Support Room. The film includes some of the most spectacular lunar photography of an Apollo mission.

Awards: Golden Eagle Certificate, Council on Non-theatrical Events (CINE); Special Prize, 20th International Exhibition of Specialized Cinematography, Rome, Italy, 1973.

Apollo 17—On the Shoulders of Giants
16mm Film, 29 min, color, 1973
Producer USNASA
Title No. 001992/HH $168.25

A documentary view of the Apollo 17 journey to Taurus—Littrow, the final lunar landing mission in the Apollo Program. The film depicts the highlights of the mission and then relates the Apollo Program to Skylab, the Apollo/Soyuz link-up, and Space Shuttle.

Awards: Chris Bronze Plaque Award, 21st Annual Columbus Film Festival; Trophy of the Italian Department of Defense; 1st International Review of Cinema and TV Films on Flight, Milan, Italy, 1974.

Examining the Moon
16mm Film, 7 min, color, 1969
Producer USNASA
Title No. 310620/HH $40.50

Describes the operation of the Apollo Lunar Survey and the experiment package on the Moon.

Flight of Eagle and Columbia
16mm Film, 7 min, color, 1969
Producer USNASA
Title No. 331675/HH $40.50

Shows man's first Moon landing, July 1969. Highlights the flight of Astronauts Armstrong, Aldrin, and Collins from launching, through post-recovery activites. Emphasizes the initial exploration of the lunar surface.

Apollo/Soyuz
16mm Film, 28 min, color, 1975
Producer USNASA
Title No. 009482/HH $162.50

An historic space agreement between the United States and the Soviet Union brought about a joint space flight called Apollo/Soyuz. We see intimate portraits of astronauts and; cosmonauts training for the Apollo/Soyuz mission through the eyes of these representatives of two different cultures.

Award: Chris Bronze Plaque Award, 23rd Annual Columbus Film Festival.

The Mission of Apollo/Soyuz
16mm Film, 29 min, color, 1976
Producer USNASA
Title No. 009970/HH $168.25

The Apollo/Soyuz Mission was a precedent-setting event in the sphere of international manned space flight. The film stresses the spirit of cooperation and friendship that helped make the mission a success. It generally follows the mission timeline, with appropriate flashbacks to detail the period of development and training, and concludes with a projection on the future of international cooperation in space featuring the Space Shuttle and the European development Spacelab.

Award: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE).

The Time of Apollo
16mm Film, 28 min, color, 1975
Producer USNASA
Title No. 009613/HH $162.50

In the year 1961, the President of the United States set forth the task . . . "This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth." The decade is over and the task has been accomplished. Project Apollo has been achieved. This film is a tribute to the historical accomplishment and era.

Awards: Special mention award—17th International Festival of Documentary and Short Films, Bilbao, Spain, 1976; Silver Medal Award, Festival of the Americas, 1976.

NASA Audiotapes

Audiotapes of Apollo and other manned space flights document mission highlights and conversations between astronauts.

■ **Apollo 7 Mission Highlights**
14 min, audiotape
Title No. 001981/HH $10.00

■ **Apollo 8 Mission Highlights**
15 min, audiotape
Title No. 001982/HH $10.00

■ **Apollo 9 Mission Highlights**
20 min, audiotape
Title No. 001983/HH $10.00

■ **Apollo 10 Mission Highlights**
33 min, audiotape
Title No. 001984/HH $10.00

■ **Apollo 11 Mission Highlights**
57 min, audiotape
Title No. 001985/HH $10.00

■ **Apollo 12 Mission Highlights**
41 min, audiotape
Title No. 005287/HH $10.00

■ **Apollo 13 Mission Highlights**
34 min, audiotape
Title No. 001986/HH $10.00

■ **Apollo 14 Mission Highlights**
38 min, audiotape
Title No. 001987/HH $10.00

■ **Apollo 15 Mission Highlights**
35 min, audiotape
Title No. 001988/HH $10.00

■ **Apollo 16 Mission Highlights**
30 min, audiotape
Title No. 104173/HH $10.00

■ **Apollo 17 Mission Highlights**
34 min, audiotape
Title No. 001990/HH $10.00

■ **Apollo/Soyuz Mission Highlights**
98 min, audiotape
Title No. 009706/HH $10.00

■ **Project Gemini Highlights**
38 min, audiotape
Title No. 002171/HH $10.00

■ **Project Mercury Highlights**
25 min, audiotape
Title No. 002172/HH $10.00

■ **Skylab 1 and 2 Mission Highlights**
94 min, audiotape
Title No. 009370/HH $19.50

■ **Space Age Sound Effects**
15 min, audiotape
Title No. 002199/HH $10.00

Life in Space

4 RMS—Earth View
16mm Film, 28 min, color, 1975
Producer USNASA
Title No. 009611/HH $162.50

Skylab was the first United States manned space station. This is the story of the three missions, the nine astronauts, and their 171 days in the manned laboratory. Criss-crossing 70 per cent of Earth's land area, Skylab's sensors gathered information about many features of the planet. Actor E. G. Marshall is host and moderator.

Awards: Silver Medal International Film and TV Festival, New York; Golden Eagle, Council on International Non-theatrical Events (CINE).

Life?
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 008118/HH $87.00

Discusses the general characteristics of life as we know it. Uses a number of examples to show how life has adapted to Earth conditions and certain life forms can withstand environmental shocks. Describes the conditions on Mars with the question raised as to the possibility of life existing there.

Life Beyond Earth and The Mind of Man
16mm Film, 25 min, color, 1975
Producer USNASA
Title No. 009709/HH $145.00

Explores implications of the fascinating subject of possible existence of extraterrestrial life within our galaxy and the universe.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Living in Space
3 16mm Films, color, 1966
Producer USNASA

■ **The Case for Regeneration**
16mm film, 12 min, color
Title No. 002276/HH $69.50

Introduces the concept of regenerative life support. Shows what is needed to provide men with clean fresh air, drinkable water, food, personal hygiene, water disposal, temperature and humidity control. Indicates the problems involved in converting waste materials into usable products for manned flights of long duration.

■ **Regenerative Processes**
16mm film, 20 min, color
Title No. 002277/HH $116.00

Shows the principles of physics, chemistry, and mechanics employed in a regenerative life support system. Includes oxygen recovery, water purification, food and waste management, humidity and temperature control.

Awards: Certificate of Participation, 4th International Exhibition of Scientific & Technical Films, Brussels, Belgium; Certificate of Participation, 5th ANZAAS International Scientific Film Exhibition, Australia, 1967; Honors Certificate, American Film Festival, 1966

■ **A Technology for Spacecraft Design**
16mm film, 12 min, color
Title No. 002307/HH $69.50

Shows the features that must be incorporated into a spacecraft intended for long duration manned space flight, and the technology that is being developed to solve the numerous problems.

Awards: Golden Radar Award and Certificate, XIV International Festival of Electronic, Nuclear Telecommunications and Motion Pictures, Rassegna, Italy, 1967

Mars—Is There Life?
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 008117/HH $87.00

Discusses the possible past history of Mars and its present surface topography—volcanoes, ice caps, stream beds, impact craters, canyons, and wind-eroded surfaces. Also discusses the Viking Lander and its biology experiments in relationship to the search for life on Mars. Encourages students to discuss life forms that might be able to survive on Mars and the potential significance of their discovery.

Mars and Beyond
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 007988/HH $87.00

Traces the Viking mission to Mars to explore the biochemical evidences of life. Shows elementary chemical components of life and discusses how they are related to the Gas Chromatograph Mass Spectrometer on board the Viking Lander. Describes the GCMS design and operating function. Concludes with the potential significance of biochemical findings, how they may relate to past, present, and future Martian life.

A New View of Mars
16mm Film, 10 min, color, 1975
Producer USNASA
Title No. 009410/HH $58.00

Delves into past, present, and future scientific thought concerning the planet Mars and the possibility of life existing there.

A Question of Life
16mm Film, 29 min, color, 1977
Producer USNASA
Title No. 008979/HH $168.25

Discusses a definition of life and general conditions necessary to sustain life. Viewers are introduced to the possible past history of Mars as well as its present surface topography and its capacity to support life as we know it. Emphasizes the Viking Life Detection Experiments, including the three biology experiments and the organic analysis instrument.

Viking
16mm Film, 29 min, color, 1976
Producer USNASA
Title No. 008113/HH $168.25

Presents a comprehensive look at the preparations for the Viking/Mars landing scheduled for July 4, 1976. Traces the beginning of the search for life on the Martian surface and other scientific experiments. Focuses on the scientists connected with the Viking Mission. Explores the problems, solutions, concerns, anxieties, and aspirations leading to the event.

Who's Out There?
16mm Film, 28 min, color, 1975
Producer USNASA
Title No. 009327/HH $162.50
Explores the new view of terrestrial life now emerging from the results of probes to the planets. Discusses the conclusion of a number of distinguished scientists that other intelligent civilizations exist in the universe.

Research

Adventures in Research
16mm Film, 18 min, color, 1975
Producer USARC Sponsor USNASA
Title No. 009842/HH $104.50
Shows the need for basic scientific research and how this research is conducted at Ames Research Center in California. Emphasizes research in aeronautics through flight simulation, wind tunnel, and V/STOL testing; also shows work in the life sciences, planetary exploration, and advanced computation using the world's largest computer, the 'ILLIAC.'

Careers in Space Research
6 16mm Films, color, 1968
Producer USNASA
These films are of primary value in career counseling. Each film shows, in a different way, the nature of basic scientific research and the life and work of the research scientist. Produced under the supervision of the University Film Foundation.

■ **Ceramics in Space**
16mm film, 20 min, color
Title No. 206759/HH $116.00
Using ceramics as a typical field of scientific study, the film shows how a graduate student develops the academic discipline needed to conduct original research, including: search of scientific literature; definition of the problem; design, analysis, and performance of experiments; collection and evaluation of data. Shows the relationship between students, faculty advisor, and other scientific disciplines. Features Dr. James I. Muller, Professor of Ceramic Engineering, University of Washington.

■ **The Challenge of Unanswered Questions**
16mm film, 16 min, color
Title No. 207865/HH $92.75
Presents the principal features of the aurora—one of the most mysterious and fascinating of natural phenomena. Shows the theories used in studying it. Shows the life and experiences of a graduate student working under Dr. Sydney Chapman at the Geophysical Institute, University of Alaska.

■ **Great is the House of the Sun**
16mm film, 21 min, color
Title No. 001733/HH $121.75
Atop Mount Haleakala, the "House of the Sun," Dr. Walter Steiger and his colleagues from the University of Hawaii study the effects of the airglow phenomena and solar radiation in space, while other scientists prepare experiments to be flown aboard space satellites to study ultraviolet radiation.

■ **It's You Against the Problem**
16mm film, 23 min, color
Title No. 002473/HH $133.50
Shows basic research in ablative materials being carried out by Dr. Simon Ostrach, Director, Division of Fluid, Thermal and Aerospace Sciences, Case Institute of Technology (now Case Western Reserve University) and by a graduate student working under Dr. Ostrach's guidance. Emphasizes the challenge of research and the education and life of a scientist.
Award: Golden Eagle Certificate, Committee on International Non-theatrical Events (CINE).

■ **The Poetry of Polymers**
16mm film, 19 min, color
Title No. 003053/HH $110.25
Shows research in polymers being carried out by Dr. Frank d'Alelio, Research Professor of Chemistry, University of Notre Dame. The molecular structure of polymers is explained and the molding of a polymer from basic ingredients is demonstrated. The challenge of inquiring into the basic nature of materials is dramatically presented.

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■ **X-Ray Spectroscopy—The Inside Story**
16mm film, 26 min, color
Title No. 824470/HH $150.75
Dr. Robert J. Liefeld, Professor of Physics, New Mexico State University, explains how X-rays are generated and how an X-ray spectrometer disperses them into a spectrum. He shows how specially grown crystals are made and used in a two-crystal vacuum X-ray spectrometer to diffuse an X-ray beam, isolate a single wavelength, scan a spectrum and record its characteristics.

Space in the 70's—Aeronautics
16mm Film, 28 min, color, 1971
Producer USNASA
Title No. 002196/HH $162.50
Shows the problems of flight and operational problems of commercial and private aviation that need to be solved and the areas of research that NASA is concentrating on.
Awards: Atlanta International Film Festival; 18th Science and Nuclear, Rassegna, Italy; Chris Award, Columbus Film Festival; Gold Camera Plaque, U.S. Industrial Film Festival

Space in the 70's—Challenge and Promise
16mm Film, 27 min, color, 1973
Producer USNASA
Title No. 006834/HH $156.50
An overview of America's space program and the new technologies and research being used to explore our world and the universe. A composite look at satellite applications, aeronautics, and space experiments in development.

Space in the 70's—The Knowledge Bank
16mm Film, 25 min, color, 1971
Producer USNASA
Title No. 002189/HH $145.00
Research results are "deposits," to be accumulated and later drawn upon—with the payoff frequently beyond even the range of science fiction. This film takes a broad look at physics and astronomy research performed in the laboratory of space—a laboratory teeming with particles, fields, streams, flares, quasars, pulsars; a laboratory where the experiments will answer questions whose importance to us we can't even guess now.

Radio Astronomy Explorer
16mm Film, 30 min, color, 1968
Producer USNASA
Title No. 632605/HH $174.00
Against a background of research currently performed by optical and ground-based radio astronomy, this describes the Radio Astronomy Explorer which provided information about radio waves emitted by the Sun, Earth, and Jupiter.

Research in the Atmosphere
16mm Film, 25 min, color, 1969
Producer USNASA
Title No. 003273/HH $145.00
Traces the methods used by man to explore the upper atmosphere and near Earth environment from ancient times until the present, including the use of balloons, sounding rockets, and other devices. Presents a detailed examination of modern studies of ionized helium in the atmosphere and how the data gained help scientists construct a scientific model.

Space Shuttle
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 000780/HH $87.00
Describes the reusable Space Shuttle which will replace nearly all expendable launch vehicles. Animation shows a typical flight mission and planned uses of Shuttle. Film concludes with roll-out of first Shuttle Orbiter, the "Enterprise."

Spaceship Skylab—Wings of Discovery
16mm Film, 9 min, color, 1976
Producer USNASA
Title No. 005880/HH $52.25

Opens with the 'Need for Man in Space' message. Relates to the early problems in the mission and how the entire project would be a failure if man did not personally attach the parasol, deploy the solar array, and cope with other anomalies during the three missions. Explains the reasons for the results of the major experiments conducted on board.

Skylab and the Sun
16mm Film, 13 min, color, 1976
Producer USNASA
Title No. 010056/HH $75.50

Shows how we can use information learned about the Sun to our advantage. Presents information gathered by the Skylab missions on the behavior of the Sun, solar energy, plasma flow, and mass/thermal transfer. Includes comments from Skylab principal investigators.

Skylab Science Demonstrations—A Series
6 16mm Films, color, 1975
Producer USNASA
Series No. 010017/HH $557.00

A six-film series depicting science demonstrations performed under zero-gravity conditions (weightlessness) on the Skylab 3 and 4 missions. Narrated by Dr. Owen K. Garriott, NASA astronaut.

■ **Zero-G**
16mm film, 15 min, color
Title No. 009953/HH $87.00

A fascinating introduction to weightlessness aboard space station Skylab. In this high orbiting laboratory, men float gracefully and freely in three dimensions, performing experiments which can only be done in zero-gravity.

■ **Conservation Laws in Zero-G**
16mm film, 18 min, color
Title No. 009614/HH $104.50

In weightlessness, a tumbling, twisting, human can perform many startling demonstrations of angular momentum conservation. The film explores peculiar phenomena by interweaving Skylab demonstrations with earthbound photography. Examples of simultaneous conservation of angular momentum and energy for non-rigid spinning bodies are discussed.

■ **Gyroscopes in Space**
16mm film, 15 min, color
Title No. 009958/HH $87.00

The motion of gyroscopes is not only interesting to students, but also essential to space flight. Both aspects are explored by the film, which focuses on gyroscopic demonstrations and applications on Skylab. A perfectly free spinning gyro is observed for the first time.

■ **Fluids in Weightlessness**
16mm film, 15 min, color
Title No. 009957/HH $87.00

The behavior of ordinary fluids in a weightless condition is astonishing. This film explores numerous fluid phenomena in orbit: behavior both mysterious in appearance and yet relevant to diverse fields of science and technology.

■ **Magnetism in Space**
16mm film, 19 min, color
Title No. 009955/HH $110.25

The Earth's magnetic field extends far out into space. Its presence can be clearly demonstrated by releasing small magnets within an orbiting spacecraft. The film reviews familiar aspects of magnetism and explores the behavior of magnets in weightlessness.

■ **Magnetic Effects in Space**
16mm film, 14 min, color
Title No. 009954/HH $81.25

Dr. Garriott utilizes a classroom format to teach magnetism and the behavior of magnets in the Skylab orbiting spacecraft.

Satellite Applications

Echo in Space—Communication Milestone
16mm Film, 15 min, color, 1961
Producer USNASA
Title No. 286390/HH $130.25

Describes the first establishment of communications in outer space by the satellite Project Echo in 1960.

Environmental Series: Landsat, A Satellite for all Seasons
6 16mm Films
Producer USNASA
Series No. 001291/HH $522.00

This series describes use of NASA's Landsat satellite for repeated rapid surveys of Earth's environment and provides visual imagery of resource problems in the fields of environmental quality, geology, and in land development supervision.

■ **The Wet Look**
16mm film, 15 min, color, 1976
Title No. 008744/HH $87.00

Explores how Landsat's remote sensing capabilities help resolve water resource problems. The satellite provides information to hydrologists about snowfall in the mountains, enabling them to estimate the basic water supply available to western states. Landsat helps in controlling floods, both by monitoring flood plains, and by mapping snow packs and potentially dangerous man-made lakes. Landsat also makes valuable contributions in flood assessment and pollution control.

Award: Gold Medal, Virgin Islands International Film Festival.

■ **Pollution Solution?**
16mm film, 15 min, color, 1977
Title No. 008977/HH $87.00

The film discusses how Landsat's remote sensing capabilities can aid in resolving environmental quality problems. The satellite can locate and monitor strip-mining operations to facilitate land reclamation programs. The satellite helps solve some meteorological mysteries by tracking the path of airborne pollution. It can also monitor the course of industrial wastes and garbage dumped into our lakes, rivers and coastal areas.

■ **The Fractured Look**
16mm film, 15 min, color, 1977
Title No. 008974/HH $87.00

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are also the pathways minerals use to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources.

■ **Growing Concerns**
16mm film, 15 min, color, 1977
Title No. 000338/HH $87.00

The film introduces the Landsat satellite as a partial solution to the world's need to survey and monitor agricultural resources. The satellite's imagery is being used experimentally to supplement U.S. ground surveys in an effort to increase the accuracy of estimates of crop production and inventory. Three governmental agencies are cooperating in the Large Area Crop Inventory Experiment to see how Landsat can be used to estimate crop production on a worldwide basis. By providing a comprehensive view of our forest lands, the satellite information may help improve our management in the area of forestry. Satellite imagery can also help control insect destruction of crops and trees by pinpointing infested areas for spraying.

■ **Land for People, Land for Bears**
16mm film, 15 min, color, 1972
Title No. 008975/HH $87.00

Animals and people use the land—for shelter, food, transportation, recreation, to make their living. This particular film looks at how the Landsat satellite supplies a new kind of data for land use mapping and wildlife habitat mapping. The satellite's multi-spectral scanning instruments record the spectral signatures or reflectance values, of the components of the Earth's surface. In Florida's Brevard and Orange counties, Landsat imagery is used to monitor land development. Animal biologists are using data to identify habitats for the relocation of endangered animal species.

■ **Remote Possibilities**
16mm film, 15 min, color, 1977
Title No. 008976/HH $87.00

The responsible management of resources on Earth is a grave concern to all its inhabitants. This film presents Landsat and its "big picture from outer space." The concept of remote sensing is explained. The satellite can provide visual imagery of resource problems in the fields of environmental quality, geology, water, land use and agriculture. The data acquired by the satellite is available to everyone to help resolve resource problems.

ERTS—Earth Resources Technology Satellite
16mm Film, 29 min, color, 1973
Producer USNASA
Title No. 002084/HH $168.25

U.S. scientific investigators explain how they are using ERTS (later renamed Landsat) images to identify crops, forests, and grass lands, study urban development, determine the boundary of wet lands, identify geological features that may lead to mineral and fuel deposits, and monitor disasters including volcanic eruptions and floods.

Award: Bronze Medal Award, Atlanta Film Festival.

Images of Life
16mm Film, 25 min, color, 1976
Producer USNASA
Title No. 010022/HH $145.00

The film concentrates on the resources assessment capabilities offered by Earth-orbiting Landsat satellites. Special imagery from the Landsats provides a means for monitoring global conditions and expanding information on the planet's structure and resources. Landsat data is used to gain new insights into agriculture, mineral deposits, oceanography, geology and numerous other areas of concern. Examples of Landsat data in this film are worldwide in scope.

If One Today—Two Tomorrow
16mm Film, 28 min, color, 1976
Producer USAID Sponsor USNASA
Title No. 000336/HH $162.50

Addresses the need for the worldwide use of communication technology for learning and growing as world population increases. Describes how radio, television, and communications satellite systems are used as instruments for education.

Key to Innerspace
16mm Film, 19 min, color, 1975
Producer USN
Title No. 009654/HH $110.25

Presents a special report on contributions of Skylab 4 to oceanography.

Meanwhile Back on Earth
16mm Film, 14 min, color, 1972
Producer USNASA
Title No. 002128/HH $81.25

Considers the impact of aerospace technology on the applications of industrial design to such things as automobile suspension systems, large coliseum domes, antenna towers, helicopters, electric power plants, paper pulpmaking, railbeds, and skyscrapers.

A New Look at an Old Planet
16mm Film, 26 min, color, 1969
Producer USNASA
Title No. 002593/HH $150.75

Through experiences in the lives of a Texas coastal family, the film dramatizes the benefits of weather, communication, and navigation satellites. The benefits of satellites in agricultural, oceanographic, and natural resources studies in the 1970s are described.

A New View of Space
16mm Film, 28 min, color, 1973
Producer USNASA
Title No. 002141/HH $162.50

A visual dynamic overview of the Space Program, past, present, and future, using the underlying theme of photography to tell the story. Emphasizes how photography has contributed toward many achievements in research and engineering; in space science and exploration; and in space benefits to mankind.

Awards: Gold Camera Award, U.S. Industrial Film Festival • Silver Cup and Diploma XXth Rassegna International, Rome • Blue Ribbon Trophy, 15th Annual American Film Festival, New York • Golden Eagle Certificate (CINE).

Partners With Industry
16mm Film, 13 min, color, 1975
Producer USNASA
Title No. 009841/HH $75.50

This film is the story of how America's industry can benefit from NASA technology—now and in the future. Looking to the future, as NASA continues to explore the frontier of space, America's industrial community will rely heavily upon this developing resource. It touches almost every branch of science in almost every discipline of technology.

Space in the 70's—Space Down to Earth
16mm Film, 28 min, color, 1970
Producer USNASA
Title No. 702425/HH $162.50

A highly visual presentation of the role of applications satellites in solving Earthbound problems. The film illustrates satellite use in such functions as tracing pollution, locating mineral resources, making long-range weather forecasts, providing more precise Earth measurements, and improving navigation and communications.

Space Photography
2 Sound Filmstrips, 1967
Producer USNASA

■ **Geology from Space**
color filmstrip, 24 min audiotape
Title No. 002096/HH $12.50

Uses photographs of the Earth taken by Gemini astronauts to show various geological features around the world. Emphasizes how space photography can aid future geological study.

■ **Meteorology from Space**
color filmstrip, 22 min audiotape
Title No. 002132/HH $12.50

Shows how Tiros photography of storm centers and cloud formations provides new knowledge about the weather.

STARPAHC
16mm Film, 28 min, color, 1976
Producer USNASA
Title No. 000295/HH $162.50

STARPAHC is an acronym for a combined NASA and U.S. Indian Health Service program. By portrayal of an individual illness, the audience is given an understanding of the workings of the health delivery system on the Arizona Papago Reservation. The patient, stricken at a remote village, is followed through progressive health care stages, leading to diagnosis and treatment. Facilities, equipment and personnel functions are explained in concert with detailed methods of operation.

Survival
16mm Film, 18 min, color, 1976
Producer USNASA
Title No. 000290/HH $104.50

Shows the use of space-age tools in predicting and coping with natural disasters. Emphasizes how satellite communications systems have proven invaluable in relief efforts.

Astronomy 2

Airborne Eclipse Expedition, 1972
16mm Film, 12 min, color, 1972
Producer USAEC
Title No. 005389/HH $69.50

Records and studies a total solar eclipse. Deals with the preparation, scientific equipment used, and photographic results obtained from the expedition. Includes actual live motion picture footage of the various phases of the eclipse.

The Challenge of Unanswered Questions
16mm Film, 16 min, color, 1968
Producer USNASA
Title No. 207865/HH $92.75

Presents the principal features of the aurora—one of the most mysterious and fascinating of natural phenomena. Shows the theories of its cause and the instruments and techniques used in studying it. Shows the life and experiences of a graduate student working under Dr. Sydney Chapman at the Geophysical Institute, University of Alaska.

Earth-Sun Relationship
16mm Film, 6 min, color, 1974
Producer USNASA
Title No. 005155/HH $34.75

An animated motion picture depicting how our Sun and planets were formed. The film further explains how, through NASA's space probes, we discovered the Van Allen belt and how the Earth is protected from solar wind and ion particles by the magnetosphere. Finally, the film depicts how a star dies.

HEAO—The New Universe
16mm Film, 20 min, color, 1976
Producer USNASA
Title No. 000337/HH $116.00
Describes the High Energy Astronomy Observatory (HEAO) program, man's newest attempt to probe the mysteries of the universe.

Our Solar System
16mm Film, 5 min, color, 1973
Producer USNASA
Title No. 00733/HH $29.00
Teaches names, line-up and charactoristics of the planets in our solar system. The film is done in animation and sung to a catchy tune, "My Very Educated Mother Just Served Us Nine Pizza Pies."
Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE); Silver Screen Award, Industrial Film Festival.

Radio Astronomy Explorer
16mm Film, 30 min, color, 1968
Producer USNASA
Title No. 632605/HH $174.00
Against a background of research currently performed by optical and ground-based radio astronomy, this describes the Radio Astronomy Explorer which provided information about radio waves emitted by the Sun, Earth, and Jupiter.

Seeds of Discovery
16mm Film, 28 min, color, 1970
Producer USNASA
Title No. 675125/HH $162.50
An introduction to planetary exploration and scientific satellite research considered for the 1970's. The film briefly describes plans for Mariner fly-bys of Mars, Pioneer studies of Jupiter, landings of unmanned Viking spacecraft on Mars, a grand tour of the outer planets, and solar and other astronomy research.
Awards: Columbus Film Festival; International Film & TV Festival; Council on International Non-theatrical Events (CINE); International Exhibition of Scientific Films, Buenos Aires; Golden Mercury Film Prize, Venice, Italy.

Space in the 70's—Exploration of the Planets
16mm Film, 25 min, color, 1971
Producer USNASA
Title No. 002197/HH $145.00
Summarizes the principal features of the planets and presents the various missions planned for their exploration during the decade of the 1970's.

Skylab And The Sun
16mm Film, 13 min, color, 1976
Producer USNASA
Title No. 010056/HH $75.50
Shows how we can use information learned about the sun to our advantage. Presents information gathered by the Skylab missions on the behavior of the Sun, solar energy, plasma flow, and mass/thermal transfer. Includes comments from Skylab principal investigators.

A View of the Sky
16mm Film, 28 min, color, 1967
Producer USNASA
Title No. 003857/HH $162.50
By use of symbolic photography, this film explores various historical theories of the origin and order of the solar system from Copernicus through Einstein, with a brief look at modern scientific exploration of space, our knowledge of the solar system is traced through the view of a youth of today
Award: Chris Certificate, Columbus Film Festival

The Moon

Assignment—Shoot The Moon
16mm Film, 28 min, color, 1967
Producer USNASA
Title No. 149925/HH $162.50
Summarizes the exploration of the Moon conducted through unmanned Ranger, Surveyor, and Lunar Orbiter spacecraft, and shows how such detailed data and photography contributed to the first manned flights to the Moon. The film describes the complexities of close-up photography of the Moon, and includes good views of craters, mountain ranges, and other lunar terrain.
Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE); Award of Merit, American Film Festival.

Celestial Mechanics and the Lunar Probe
16mm Film, 9 min, color, 1958
Producer USNASA
Title No. 205181/HH $52.25
Explains the 18½ year cycle of the Moon's rise and fall in latitude in relationship to the Earth. Describes the mechanics of the Earth circling the Sun in a circular orbit while the Moon revolves around the Earth in an elliptical orbit. Animated.

Mare Tranquillitatis—Falstaff, Arizona
16mm Film, 12 min, color, 1969
Producer USGS
Title No. 005128/HH $98.50
Documents the construction of a 'lunar crater field' near Sunset Crater, Az. Documents how the site was prepared using explosives. Compares aerial photographs of the completed construction to those on the lunar surface.

NASA Lunar Series
3 16mm Films
Producer USNASA

■ **Reading the Moon's Secrets**
16mm film, 16 min, color, 1977
Title No. 008978/HH $98.50
The film is divided into 10 short segments, each treating an important aspect of lunar knowledge, using Apollo-gained data as appropriate. It is designed to be used as a teaching film in science classes in secondary schools at the seventh-grade level and above. The student is expected to answer questions designed into the film in each segment. A discussion period will follow the screening of the film and will be based on the accompanying teacher's guide which contains the major part of the instruction related to the film.

■ **The Moon—Old and New**
16mm film, 25 min, color, 1970
Title No. 531530/HH $150.75
Shows what we have learned about the Moon from our unmanned spacecraft and our manned lunar landings.
Awards: Council on International Non-theatrical Events (CINE); 5th International Review of Didactic Films, Rome

■ **The Moon—An Emerging Planet**
16mm film, 13 min, color, 1973
Title No. 551530/HH $75.50
The film reviews what we have learned of the early events in the history of the Moon, in non-technical terms. It details the accretion, structural formation, volcanic activity, and bombardment. It briefly compares the geology of the Moon with that of Earth and other planets.

Ranger Lunar Probe Series
3 16mm Films
Producer USNASA

■ **Ranger 07—Photographs of the Moon**
16mm film, 8 min, b/w, 1964
Title No. 634800/HH $26.50
Describes briefly the step-printed TV photographs of the Moon taken on July 31, 1964. Gives a detailed description of selected photographs.

■ **Ranger 08—Television Pictures of the Moon**
16mm film, 8 min, b/w, 1965
Title No. 634791/HH
Shows the photographs taken by Ranger 8 on February 17, 1965. Gives a detailed description of selected photographs.

■ **Ranger 09—Television Pictures of the Moon**
16mm film, 5 min, b/w, 1965
Title No. 003220/HH $23.00
Shows photographs taken by Ranger spacecraft in 1965, with a narrative account of the missions. The photographs have been printed to provide continuous views as the spacecraft descends toward the Moon until the moment of impact, and wide and narrow angles are included.

Satellite Astronomy—Progress and Promise
16mm Film, 17 min, color, 1969
Producer USNASA
Title No. 003333/HH $98.50
Reviews principal results of unmanned satellite exploration of the Moon, near planets, and the stars during the past decade. Describes studies proposed for the 1970's.

Mars/Mercury/Venus

Mariner/Mars, 1969
16mm Film, 28 min, color, 197[illegible]
Producer USNASA
Title No. 506377/HH $162.50
Reviews the principal features of Mars that were known prior to 1969 and those that were determined by the two Mariner spacecraft that passed close by in 1969. Numerous photographs of the Martian surface are incorporated.

Mars—The Search Begins
16mm Film, 29 min, color, 1974
Producer USNASA
Title No. 004667/HH $168.25
The film depicts the planet Mars as known from the 7,000 pictures taken by the Mariner 9 spacecraft. The Viking project storyline is carried by scientists Carl Sagan, Cornell; Gerald Soffen, NASA; and Harold Masursky, U.S. Geological Survey.
Awards: Golden Eagle Certificate, Council on International Non-theatrical Events (CINE); Lawrence Science Award, National Educational Film Festival; Blue Ribbon Award, American Film Festival; Gold Medal Award, Atlanta International Film Festival.

Mercury—Exploration of a Planet
16mm Film, 28 min, color, 1976
Producer USNASA
Title No. 00335/HH $162.50
The flight of the Mariner 10 spacecraft to Venus and Mercury is detailed in animation and photography. Views of Mercury are featured. Includes animation on origin of the solar system. Jet Propulsion Laboratory Director Dr. Bruce C. Murray comments on mission.

A Mission for Mariner
16mm Film, 15 min, color, 1969
Producer USNASA
Title No. 002543/HH $87.00
Illustrates, largely through animation, the principal results of the unmanned Mariner flyby of the planet Venus in 1967, including new knowledge of the composition and density of the Venusian atmosphere; surface pressure and temperature; mass and radiation.

A New View of Mars
16mm Film, 15 min, color, 1969
Producer USNASA
Title No. 009410/HH $58.00
Delves into past, present, and future scientific thought concerning the planet Mars and the possibility of life existing there.

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in medicine, allied health, dentistry, safety, social sciences, education, industrial/vocational, and other subjects produced by the United States Government are also available for sale and rental from the Center.

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Celestial Navigation

Basic Celestial Concepts Series
4 16mm Films, color, 1971
Producer USN

■ **Basic Celestial Concepts—Horizon System**
16mm film, 15 min, color
Title No. 005475/HH $87.00
Shows basic celestial navigation concepts. Includes horizon system terminology and definitions.

■ **Basic Celestial Concepts—Intercept Method**
16mm film, 15 min, color
Title No. 005474/HH $87.00
Shows how to visualize concepts and apply them to celestial chart examples.

■ **Basic Celestial Concepts—Solution and Practical Application**
16mm film, 15 min, color
Title No. 005476/HH $87.00
Explains that standard HO 249 sight reduction tables demonstrate solutions to practical problems.

■ **Basic Celestial Concepts—Theory**
16mm film, 15 min, color
Title No. 005477/HH $87.00
Shows basic celestial navigation concepts. Demonstrates terrestrial and celestial spheres.

Space Navigation
16mm Film, 21 min, color, 1967
Producer USNASA
Title No. 702576/HH
Explains in non-technical terms the mathematical principles of charting a course in space for both manned and unmanned spacecraft. Shows navigational techniques to be considered in future flights from the Earth to other planets, with emphasis on navigational problems and equipment used in the Apollo Program.
Awards: Chris Statuette, Columbus Film Festival; Certificate of Exhibition, Edinburgh International Film Festival; Golden Eagle Certificate, Council on International Non-theatrical Events (CINE); Gold Mercury Film Prize, Venice, Italy; Certificate, Industry Film Producers Association.

US Naval Observatory
16mm Film, 18 min, color, 1976
Producer USN
Title No. 767781/HH $104.50
Shows how astronomers and mathematicians determine time—predict and publish the positions of the Sun, Moon, Stars, and planets for navigation and scientific purposes—and do fundamental astronomical research.

Biology 3

Botany

Air Pollution and Plant Life
16mm Film, 20 min, color, 1970
Producer USEPA
Title No. 122260/HH $116.00
Surveys air pollution injury to vegetation across the U.S. by common atmospheric pollutants such as sulphur dioxide, oxides of nitrogen, fluorides, ozone, and pan. Areas of injury surveyed include Tennessee, Alabama, Florida, West Virginia, Maryland, and California.

Air Pollution Effects on Vegetation
Slide Set, 77 color slides, audiotape, 1970
Producer USEPA
Title No. 122272/HH $19.50
Surveys air pollution injury to vegetation across the country by common atmospheric pollutants such as sulphur dioxide, oxides of nitrogen, fluorides, ozone, and pan.

Controlled Photosynthesis
16mm Film, 24 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 000478/HH $156.50
Points out the significance of photosynthesis as an important chemical reaction. Describes the injection of radioactive carbon-14 into the plant, and tells how this tracer technique is used to determine the series of chemical compounds the plant makes before producing sugars. Discusses some current research on enzyme reactions in plants.

The Day the Tide Turned Red
16mm Film, 27 min, color, 1975
Producer USN
Title No. 009652/HH $156.50
Discusses how Navy scientists are studying and discovering methods of controlling the 'Red Tide' phenomenon to prevent its poisonous effects on men and marine life.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Forces of Nature
16mm Film, 15 min, color, 1967
Producer USDA
Title No. 010258/HH $87.00
An interpretive film produced for presentation to visitors of the Cape Perpetua Visitors Center on the Siuslaw National Forest in Oregon. The film depicts unusual flora and geological features of the surrounding area.

Mycological Slide Culture Technique
16mm Film, 7 min, color, 1965
Producer USPHS Sponsor USVA
Title No. 002571/HH $40.50
Shows a method of growing fungus on microscope cover slips to preserve mycelia and spores intact.

A Mycological Slide Culture Technique
Sound Filmstrip, 36 fr, color, 4 min audiotape, 1965
Producer USPHS Sponsor USNMAC
Title No. 540726/HH $12.50
Shows how to grow fungi on glass slides in a moist chamber in order to observe the undisturbed relationship between reproductive structures and a mycelium.

The New Numbers
16mm Film, 17 min, color, 1968
Producer USDA
Title No. 003960/HH $66.50
Describes the techniques and procedures used by USDA's Statistical Reporting Service in making enumerative and objective surveys of crop yields. Emphasis is given to the procedures used in the field for counting, measuring and weighing plant characteristics associated with yield per acre of cotton, corn, wheat, and tree fruits.

Plankton—Life of the Sea
16mm Film, 25 min, color, 1972
Producer USN
Title No. 005227/HH $145.00
Shows how the study of plankton is making major contributions toward an understanding of the ocean environment.

Plant Growth in Compensated Fields
16mm Film, 7 min, color, 1967
Producer USAEC
Title No. 000480/HH $40.50
Points out that plant growth is controlled by a sensitive mechanism which responds to brief and minute stimulation. Describes the operation and use of the mechanical servo-system which neutralizes stimuli on plants for experimental purposes.

A Tree is Born
16mm Film, 22 min, color, 1959
Producer USDA
Title No. 001918/HH $251.75
Shows the techniques Forest Service researchers employ to produce hybrid pines through controlled pollination and through the selection of superior pines and use of their natural seed. Shows a pine cone opening and tree seeds germinating and growing.

General Biology

The Bioengineers
16mm Film, 14 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005048/HH $81.25
Explores the exciting new combinations of biology and engineering at Oak Ridge National Laboratory, with special emphasis on the investigation of human cells.

Biological Transformation of Energy
16mm Film, 54 min, b/w, 1961
Producer USDA
Title No. 175800/HH $178.25
Shows progress in research to find how life uses energy from the Sun to build and drive living systems. Features personnel of the Woods Hole Marine Biological Laboratory.

Fine Structure and Pattern of Living Things
16mm Film, 59 min, b/w, 1961
Producer USDA
Title No. 004731/HH $194.75
Discusses the organization of living systems into primary patterns, and the changes and distortions that come with secondary growth.

Genetics
16mm Film, 53 min, b/w, 1961
Producer USDA
Title No. 356010/HH $175.00
Discusses recent advances in our understanding of how all living creatures, from submicroscopic viruses to man himself, transmit biological specifications to their offspring.

Life?
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 008118/HH $87.00
Discusses the general characteristics of life as we know it. Uses a number of examples to show how life has adapted to Earth conditions and how certain life forms can withstand environmental shocks. Describes the conditions on Mars with the question raised as to the possibility of life existing there.

Life Beyond Earth and the Mind of Man
16mm Film, 25 min, color, 1975
Producer USNASA
Title No. 008709/HH $145.00
Explores implications of the fascinating subject of possible existence of extraterrestrial life within our galaxy and the universe.

Mars - Is There Life?
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 008117/HH $87.00
Discusses the possible past history of Mars and its present surface topography—volcanoes, ice caps, stream beds, impact craters, canyons, and wind-eroded surfaces. Also discusses the Viking Lander and its biology experiments in relationship to the search for life on Mars. Encourages students to discuss life forms that might be able to survive on Mars and the potential significance of their discovery.

Mars and Beyond
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 007988/HH $87.00
Traces the Viking mission to Mars to explore the biochemical evidences of life. Shows elementary chemical components of life and discusses how they are related to the Gas Chromatograph Mass Spectrometer on board the Viking Lander. Describes the GCMS design and operating function. Concludes with the potential significance of biochemical findings, how they may relate to past, present, and future Martian life.

A Question of Life
16mm Film, 29 min, color, 1977
Producer USNASA
Title No. 008979/HH $168.25
Discusses a definition of life and general conditions necessary to sustain life. Viewers are introduced to the possible past history of Mars as well as its present surface topography and its capacity to support life as we know it. Emphasizes the Viking life detection experiments, including the three biology experiments and the organic analysis instrument.

Human Biology

Anatomy and Physiology
4 Color Filmstrips, 1956
Producer USA

■ **Anatomy and Physiology—The Digestive System**
80 fr filmstrip, silent
Title No. 004749/HH $10.00
Explains the digestive system and its organs through drawings. Shows the mechanical and chemical action on food which prepares it for use by the body.

■ **Anatomy and Physiology—The Lymphatic System**
55 fr filmstrip, 8 min audiotape
Title No. 004827/HH $12.50
Discusses the structure and function of the lymphatic system. Shows how lymph is formed, how lymphatic vessels serve as drainage systems, and the role of lymph nodes.

■ **Anatomy and Physiology—The Skeletal System**
58 fr filmstrip, 21 min audiotape
Title No. 004959/HH $12.50
Illustrates the characteristics and functions of various types of bone. Discusses the structure and functions of the axial appendicular skeleton.

■ **Anatomy and Physiology—The Urinary System**
28 fr filmstrip, 9 min audiotape
Title No. 006033/HH $12.50
Discusses the structure and function of the urinary system with focus on the role of each organ. Shows how the system produces, stores, and discharges urine.

The Case for Regeneration
16mm Film, 12 min, color, 1966
Producer USNASA
Title No. 002276/HH $69.50
Introduces the concept of regenerative life support. Shows what is needed to provide clean fresh air, drinkable water, food, personal hygiene, waste disposal, temperature, and humidity control.

Coping with Menstruation
Multimedia Kit, 1975
Producer FVSEIM Sponsor USNCEM
Title No. 007714/HH $18.00
Presents basic menstruation facts and hygiene skills to educable mentally retarded girls between the ages of 9 and 20. Includes 29 color slides with accompanying 14 min audiocassete; 3 additional audiccassettes; and 1 instructor's manual containing scripts and 21 transparency masters. Produced by Fox Valley Special Education Instructional Materials Center, Oshkosh, Wi, 1974. Revised and reissued by the National Center on Educational Media and Materials for the Handicapped, 1975.

The Force and Control of Surface Tension in the Lung
Slide Set, 61 color slides, 17 min audiocassette, 1975
Producer USNMAC
Title No. 009487/HH $12.50
Demonstrates how the forces of surface tension affect the lungs during inspiration and expiration. Presents a detailed explanation of the reasons surface tension exists, explains collapsing forces in alveolae caused by surface tension; and details the role of a surfactant in combating and regulating this force.

Human Reproduction
Sound Filmstrips, color, 1969
Producer USNMAC

■ **Part 1**
How Reproduction Takes Place
48 fr filmstrip, 14 min audiotape
Title No. 002110/HH $12.50
Discusses sex characteristics and functions of the male and female; the menstrual cycle, fertilization, and pregnancy.

■ **Part 2**
Development and Birth
51 fr filmstrip, 12 min audiotape
Title No. 006985/HH $12.50
Shows the stages of development of the fetus through birth.

■ **Part 3**
How Reproduction Is Controlled
51 fr filmstrip, 12 min audiotape
Title No. 002114/HH $12.50
Discusses the control of conception by the rhythm method, mechanical blockage, chemical blockage, and contraceptive pills.

Mother's Diet and Her Baby's Future
16mm Film, 23 min, color, 1969
Producer USN
Title No. 005398/HH $133.50
Shows what effect the lack of protein in the diet of pregnant rats has on their offspring. States that favorable and far-reaching results of the experiment have promoted similar research in humans. Describes how the human study is organized and the kind of data being collected.

Science in the Seventies
16mm Film, 52 min, color, 1974
Producer USNSF
Title No. 008747/HH $301.50
Summarizes the goal, orientation, and activities of the research and development community. Deals with four subject areas: man and society, the world and its resources, industry and technology, and the relevance of sciences to contemporary problems. Contains animated sequences.
Cleared for TV.

The Sea We Cannot Sense
16mm Film, 27 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005064/HH $156.50
Shows where natural background radiation comes from. Discusses low-level radiation used in medicine and dentistry—and the effects of chest x-rays, television sets, and nuclear power. Explains the Federal Radiation Protection Standards which were originally set in 1929.
Cleared for TV

VD—One, Two
16mm Film, 14 min, color, 1973
Producer USN
Title No. 005264/HH $81.25
States that trackoown of the source of venereal infection is as important as medical treatment. Shows why an individual infected with VD must not only seek proper medical treatment, but also cooperate with the VD contact interviewer, so that the source of his infection can be traced and treated.

A Practical View of Syphilis
16mm Film, 30 min, color, 1963
Producer USPHS Sponsor USNMAC
Title No. 003076/HH $174.00
Gives a practical overview of the most significant aspects of modern-day syphilis diagnosis and management. Intended for use in medical schools, it is designed to simulate a classroom lecture as closely as possible.
Recommended for professional use.

The Return of Count Spirochete
16mm Film, 21 min, color, 1973
Producer USN
Title No. 005234/HH $121.75
Dramatizes the medical facts about venereal disease. Describes symptoms, course of infection, and the effects of syphilis and gonorrhea on the human body. Emphasizes diagnosis and treatment by a physician as the only means of eradicating the infection.
Animated.

Laboratory Biology

Assessment of Risk in the Cancer Virus Laboratory
Slide Set, 42 color slides, 15 min audiocassette, 1975
Producer USOBEC
Title No. 009770/HH $12.50
Presents data which will help in evaluating occupational risk in the oncogenic virus research laboratory. Study guide included. Made in cooperation with the Dow Chemical Co.

Basic Laboratory Training
3 Sound Filmstrips, color 1953
Producer USPHS Sponsor USNMAC

■ **Care of Laboratory Animals**
80 fr filmstrip, 10 min audiotape
Title No. 007431/HH $12.50
Explains methods for handling, housing, and feeding small laboratory animals.

■ **Using Animals in the Laboratory**
68 fr filmstrip, 10 min audiotape
Title No. 005359/HH $12.50
Shows methods of handling laboratory animals.

■ **Handling and Use of Glassware**
82 fr filmstrip, 10 min audiotape
Title No. 010317/HH $12.50
Explains methods and precautions to be used in handling glassware in a laboratory.

Controlled Photosynthesis
16mm Film, 24 min. color, 1971
Sponsor USDOE Producer USAEC
Title No. 000487/HH $156.60

Points out the significance of photosynthesis as an important chemical reaction. Describes the injection of radioactive carbon-14 into the plant, and tells how this tracer technique is used to determine the series of chemical compounds the plant makes before producing sugars. Discusses some current research on enzyme reactions in plants.

Doorway To Diagnosis
16mm Film, 28 min. color, 1971
Sponsor USDOE Producer USAEC
Title No. 007055/HH $162.50

Presents the revolutionary advance in the field of biomedical instrumentation. Shows semiconductor detectors, image intensifiers, and improved x-ray scanners.

Effective Use of the Laminar Flow Biological Safety Cabinet
Slide Set, 54 color slides, 16 min audiocassette, 1973
Producer USDHEW
Title No. 005133/HH $12.50

Explains how the proper use of the laminar flow biological safety cabinet can achieve maximum protection for laboratory personnel, the working environment, and the integrity of research. Discusses the problems of contamination. Describes the equipment and procedures for use.

Formaldehyde Decontamination of Laminar Flow Biological Safety Cabinets
Slide Set, color slides, 13 min audiocassette, 1973
Producer USNIH
Title No. 005137/HH $12.50

Describes the procedures for decontaminating laminar flow cabinets using heat depolymerized paraformaldehyde. Discusses why and when decontamination is necessary. Describes the equipment and procedures used.

Hazard Control in the Animal Lab
Slide Set, 60 color slides, 15 min audiocassette, 1975
Producer USOBEC
Title No. 009432/HH $12.50

Describes the general hazards associated with animal care facilities, the laboratory procedures associated with increased risk, and the measures used to minimize these risks.

Molecular Biology—An Introduction
16mm Film, 15 min. color, 1969
Sponsor USDOE Producer USAEC
Title No. 002551/HH $87.00

Includes the improved resolution of the electron miscroscope, the isolation of cell parts by ultracentrifugation, the separation capabilities of chromatography, the localization of autoradiography, and the sensitivity of liquid scintillation counting.

Mycological Slide Culture Technique
16mm Film, 7 min. color, 1965
Producer USPHS Sponsor USVA
Title No. 002571/HH $40.50

Shows a method of growing fungus on microscope cover slips to preserve mycelia and spores intact.

A Mycological Slide Culture Technique
Sound Filmstrip, 36 fr. color, 4 min audiotape, 1965
Sponsor USNMAC Producer USPHS
Title No. 540726/HH $12.50

Shows how to grow fungi on glass slides in a moist chamber in order to observe the undisturbed relationship between reproductive structures and a mycelium.

Surface Sampling for Micro-Organisms—Swab Method
16mm Film, 5 min. color, 1965
Producer USPHS Sponsor USNMAC
Title No. 003605/HH $25.00

Shows the proper technique and procedures of surface sampling for bacteria in hospitals, using the swab method and template.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

The Zonal Ultracentrifuge
16mm Film, 6 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 007073/HH $34.75

Discusses the development of these centrifuges at Oak Ridge National Laboratory under the direction of Dr. Norman G. Anderson. Depicts their loading, separating, and unloading operations, and touches upon their role in the purification of viruses.

Microbiology

Assessment of Risk in the Cancer Virus Laboratory
Slide Set, 42 color slides, 15 min audiocassette, 1975
Producer USOBEC
Title No. 009770/HH $12.50

Presents data which will help in evaluating occupational risk in the oncogenic virus research laboratory. Study guide included. Made in cooperation with the Dow Chemical Co.

Basic Biology of Bacteria
Sound Filmstrip, 56 fr, color, 7 min audiotape, 1950
Producer USPHS Sponsor USNMAC
Title No. 007382/HH $12.50

Explains characteristics of bacteria, differences in types; feeding and multiplication; and control through boiling, freezing, and pickling.

Farm Fresh to You
16mm Film, 14 min, color, 1966
Producer USAEC
Title No. 001679/HH $81.25

Describes the preservation of fresh fruits and vegetables by radiation pasteurization, presenting evidence that spoilage can be reduced through the use of nuclear energy. Explains the process of exposing foods to the energy of the atom, using animation to show what happens during exposure.

The Fresher the Better
16mm Film, 14 min, color, 1966
Producer USAEC
Title No. 001712/HH $81.25

Uses animation to introduce the concept of radiation preservation of food and to explain the process and its results. Describes the preservation of fresh seafoods by radiation pasteurization and shows actual research being performed and products being processed by the Marine Products Development irradiator.

An Outbreak of Salmonella Infection
16mm Film, 14 min, color, 1954
Producer USPHS Sponsor USNMAC
Title No. 577470/HH (English) $81.25
Title No. 002746/HH (Spanish) $81.25

Presents a simulated typical outbreak of food-borne illness caused by organisms of the salmonella group. Discusses the source and means of contamination; factors contributing to the survival and transfer of the organism; important conditions of environment and general good handling practices; and effects of the outbreak.

An Outbreak of Staphylococcus Intoxication
16mm Film, 12 min, color, 1954
Producer USPHS Sponsor USNMAC
Title No. 577455/HH (English) $69.50
Title No. 002748/HH (Spanish) $69.50

Presents a case study of a typical outbreak of food-borne illness caused by staphylococcus organisms, including symptoms of the victims, tracing the source of the organisms as staphylococcus aureus in pastry filling, and the reasons for the incidence of the organisms in the food.

A Practical View of Syphilis
16mm Film, 30 min, color, 1963
Producer USPHS Sponsor USNMAC
Title No. 003076/HH $174.00

Gives a practical overview of the most significant aspects of modern-day syphilis diagnosis and management. Intended for use in medical schools and is designed to simulate a classroom lecture as closely as possible.

Recommended for professional use.

The Return of Count Spirochete
16mm Film, 21 min, color, 1973
Producer USN
Title No. 005234/HH $121.75

Dramatizes the medical facts about venereal disease. Describe symptoms, course of infection, and the effects of syphilis and gonorrhea on the human body. Emphasizes diagnosis and treatment by a physician as the only means of eradicating the infection.

Animated.

Roundup
16mm Film, 18 min, color, 1960
Producer USDA
Title No. 003991/HH (English) $151.00
Title No. 003799/HH (Spanish) $151.00
Tells the story of the peacetime use of atomic energy to eradicate an insidious pest—the screwworm. Shows how Florida and other southeastern states collaborated in a research and eradication program—how the world's biggest 'fly factory' was built—and how 10 million sterilized male flies were released by air over infested areas every day for months.

Surface Sampling for Micro-organisms—Swab Method
16mm Film, 5 min, color, 1965
Producer USPHS Sponsor USNMAC
Title No. 003605/HH $29.00
Shows the proper techniques and procedures of surface sampling for bacteria in hospitals, using the swab method and template.

The Zonal Ultracentrifuge
16mm Film, 6 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 007073/HH $34.75
Discusses the development of these centrifuges at Oak Ridge National Laboratory under the direction of Dr. Norman G. Anderson. Depicts their loading, separating, and unloading operations, and touches upon their role in the purification of viruses.

Zoology

Animal Bites and Rabies
16mm Film, 15 min, color,
Producer USNMAC
Title No. 137150/HH $87.00
Stresses the animal bite problem and shows what steps can be taken by the individual and community to reduce the menace. Depicts how physical and psychic trauma of rabies and other diseases can be prevented by controlling animal bites.

A Matter of Understanding—The Coyote—His Story
16mm Film, 27 min, color, 1977
Producer USEPA
Title No. 010235/HH $156.50
Explores the life and habits of the coyote, and why the animal is misunderstood. Attempts to explain that coyotes kill livestock only when natural food sources dwindle, and how other species, also misunderstood and now endangered, have been pushed aside by man. Presents the various methods of coyote control, and encourages the selective removal of only killer coyotes.

California Gray Whale
16mm Film, 22 min, color, 1975
Producer USNPS
Title No. 010062/HH $140.00
The biology and history of one of nature's largest creatures and great spectacles are featured in this unusual film including documentation of the longest known migration of any mammal.

The Dolphins that Joined the Navy
16mm Film, 27 min, color, 1964
Producer USN
Title No. 227695/HH $156.50
Shows the Navy's extensive research with dolphins and discusses future applications of the researchers' findings. Narrated by Glenn Ford.

Edge of Discovery
16mm Film, 28 min, color, 1975
Producer USN
Title No. 008108/HH $162.50
Shows the effects of sea water barnacles and fouling animals on metals and other materials. Discusses new methods for preventing marine fouling which are being researched by the Navy.

Enemy in your Home
16mm Film, 13 min, color, 1965
Producer USPHS Sponsor USNMAC
Title No. 301910/HH $75.50
Explains the epidemiology of dengue and yellow fever, the biology and methods of surveying and controlling the yellow fever mosquito (Aedes aegypti). A general film designed to obtain support from health workers and the general public for the Aedes aegypti eradication program.

A Great White Bird
16mm Film, 51 min, color, 1976
Producer USFWS Sponsor USFWSP
Title No. 008620/HH $295.75
Presents an historical documentary of the conservation effort to save the whooping crane. Depicts current research efforts and management projects to increase the whooping crane population. Produced in cooperation with the National Film Board of Canada.

Hazard Control in the Animal Lab
Slide Set, 60 color slides, 15 min audiocassette, 1975
Producer USOBEC
Title No. 009432/HH $12.50
Describes the general hazards associated with animal care facilities, the laboratory procedures associated with increased risk, and the measures used to minimize these risks. Guide included.

Laboratory Animals
2 sound Filmstrips, color, 1953
Producer USPHS Sponsor USNMAC

■ **Care of Laboratory Animals**
80 fr filmstrip, 10 min audiotape
Title No. 007431/HH $12.50
Explains methods for handling, housing, and feeding small laboratory animals.

■ **Using Animals in the Laboratory**
68 fr filmstrip, 10 min audiotape
Title No. 005459/HH $12.50
Shows methods of handling laboratory animals.

Insects and Arachnids
3 Sound Filmstrips, color
Producer USPHS Sponsor USNMAC

■ **Introduction to the Insects and Their Allies**
65 fr filmstrip, 10 min audiotape, 1959
Title No. 007375/HH $12.50
Shows the structural relationship and physiology of the principal classes of arthropods. Describes the orders of insecta and arachnida.

■ **Arthropods of Public Health Importance**
42 fr filmstrips, 7 min audiotape, 1954
Title No. 007385/HH $12.50
Shows distinguishing characteristics of cockroaches, mosquitoes, flies, bed bugs, triatoma, fleas, lice, spiders, scorpions, centipedes, ticks, and mites.

■ **The Collection and Shipment of Insects**
70 fr filmstrip, 10 min audiotape, 1957
Title No. 007408/HH $12.50
Shows methods of collecting, preserving, and shipping insects and other arthropods.

In the Beginning
16mm Film, 17 min, b/w, 1937
Producer USDA
Title No. 420530/HH $56.00
Portrays the ovulation, fertilization, and early development of the mammalian egg. Includes scenes of spermatozoa attacking the ovum, and time-lapse microphotographs of cell division in the fertilized egg.

Let's Finish the Job
16mm Film, 11 min, color, 1967
Producer USNMAC
Title No. 002520/HH $63.75
Shows the many breeding areas of the Aedes aegypti mosquito in the modern city, gives the life cycle of the mosquito and describes steps necessary to eradicate it.

Life History of the Rocky Mountain Wood Tick
16mm Film, 18 min, color, 1969
Producer USNMAC
Title No. 002526/HH $104.50
Depicts the two year life cycle of the Rocky Mountain wood tick. Shows the biology of the various stages—adults, eggs, larvae, and nymphs, and includes such features as adaptability to environment, host requirements, and natural controlling factors.

On The Ice
16mm Film, 28 min, color, 1968
Producer USNSF
Title No. 565635/HH $162.50
Documents the work of the United States Antarctic Research Program. Includes views of scuba divers swimming with seals under the ice, tunneling into a glacier to measure its movement, studying human adaptation at the South Pole, and observing the social behavior of penguins.

Plankton—Life of the Sea
16mm Film, 25 min, color, 1972
Producer USN
Title No. 005227/HH $145.00
Shows how the study of plankton is making major contributions toward an understanding of the ocean environment.

The Rhesus Monkeys of Santiago Island, Puerto Rico
16mm Film, 33 min, color, 1963
Producer USPHS Sponsor USNMAC
Title No. 003293/HH $191.50
Presents scientific observations carried out by scientists on a group of free ranging rhesus monkeys. Explores behavior patterns, including dominant-subordinate behavior among individuals and groups, feeding, mother-infant relations, and mating.

Saving the Salmon
16mm Film, 4 min, color, 1972
Producer USEPA
Title No. 005073/HH $23.25
Reports on the Environmental Protection Agency Research Laboratory in Corvallis, OR. Includes a section on artificial spawing of the sockeye salmon.

Search for the Whale
16mm Film, 20 min, color, 1976
Producer USN
Title No. 003058/HH $116.00
Explains the Navy's continuing research into the sounds of ocean mammals. Their effect on sonar, and how this new knowledge is benefiting fleet operations.

Shark—Danger in the Sea
16mm Film, 27 min, color, 1973
Producer USN
Title No. 005241/HH $156.50
Discusses how the Navy's shark research programs help in the development of equipment and procedures useful in preventing shark attacks through the study of shark behavior.

So Little Time
16mm Film, 28 min, color, 1968
Producer USBSFW
Title No. 003490/HH $162.50
Shows the need for preserving our wildlife by presenting intimate close-ups of birds and mammals in their natural environment. Describes environmental factors contributing to the decline in waterfowl and other birdlife. Shows animals in moments of peril, in territorial disputes, at rest, and in flight.

Talking with Dolphins
16mm Film, 16 min, color, 1970
Producer USN
Title No. 732620/HH $92.75
Describes studies and experiments made by Naval Electronics Laboratory scientists in the area of underwater sound, using dolphins.

Tuffy, the Sea Teacher
16mm Film, 28 min, color, 1972
Producer USN
Title No. 005263/HH $162.50
Presents a study of dolphins and other sea animals in man's continuous search for knowledge. Shows the methods of catching, training, and testing dolphins. Presents the results of these tests in which a dolphin named Tuffy was used as the subject.

The Warm Coat
16mm Film, 14 min, color, 1969
Sponsor USDOE Producer USAEC
Title No. 003871/HH $81.25
Describes the transplanting of sea otters from Amchitka Island in the Bering Sea to Alaskan coves with the cooperation of the AEC.

Winged Scourge
16mm Film, 10 min, color, 1943
Producer USOIAA
Title No. 001924/HH $58.00
Uses animation to point out that some mosquitoes of the genus Arophelas transmit malaria. Shows their development from the larvae to full growth. Demonstrates various means of combating the mosquito. An early Disney animation.

Chemistry 4

Fire Prevention—The Nature of Fire
16mm Film, 16 min, color, 1958
Producer USN
Title No. 326725/HH $92.75
Uses animation to show that a fire has three essential elements—oxygen, temperature, and fuel—and that a fire can be controlled by the elimination of any one of these elements.

Molecular Biology—An Introduction
16mm Film, 15 min, color, 1969
Sponsor USDOE Producer USAEC
Title No. 002551/HH $87.00
Includes the improved resolution of the electron microscope, the isolation of cell parts by ultra-centrifugation, the separation capabilities of chromatography, the localization of autoradiography, and the sensitivity of liquid scintillation counting.

Operation and Maintenance of the Ion Exchanger
Videocassette, 25 min, color, 1970
Producer USAF
Title No. 009425/HH $100.00
Presents information concerning the two basic forms of ion exchangers, and depicts their use as water softeners and demineralization units.

The Poetry of Polymers
16mm Film, 19 min, color, 1968
Producer USNASA
Title No. 003053/HH $110.25
Shows research in polymers being carried out by Dr. Frank d'Alelio, Research Professor of Chemistry, University of Notre Dame. The molecular structure of polymers is explained and the molding of a polymer from basic ingredients is demonstrated. The challenge of inquiring into the basic nature of materials is dramatically presented.

Solid State Principles
16mm Film, 26 min, b/w, 1969
Producer USAF
Title No. 696340/HH $85.75
Identifies the relative energy level of electrons, and chemically active and chemically stable atoms. Defines electron pair bond, covalent bond, and lattice structure. Differentiates between conductor, semiconductor, and insulator. Describes the effect of donor and acceptor atoms on chemically stable lattice structures. Defines and identifies 'P' and 'N' type materials.

Electronics and Electricity 5

Basic Electricity Program
13 16mm Films
Producer USN

■ **Basic Electricity—AC Parallel Circuits**
16mm film, 4 min, b/w, 1958
Title No. 161580/HH $13.25
Shows the elements of an AC parallel circuit, examines the effects of current, and shows what the generator sees in the following circuits: where XL exceeds XC; XC exceeds XL; and XC and XL are equal.

■ **Basic Electricity—AC Series Circuits**
16mm film, 5 min, b/w, 1958
Title No. 161570/HH $16.50
Shows the elements of an AC series circuit, demonstrates by sine waves and circuits, the effects upon, and phase relationships between, current and voltage. Using an LACR circuit, examines the effects of voltage and shows what the generator sees when XL exceeds XC and when XC exceeds XL. Demonstrates also a series resonant circuit using an LCR circuit where XC and XL are equal.

■ **Basic Electricity—Capacitance in AC Circuits**
16mm film, 5 min, b/w, 1958
Title No. 161560/HH $16.50
Defines capacitance and demonstrates how a capacitor works, explains capacitive reactance and its effects in an AC circuit, the factors that affect capacitive reactance, and the effect of capacitance in an AC circuit.

■ **Basic Electricity—Inductance in AC Circuits**
16mm film, 7 min, b/w, 1959
Title No. 161555/HH $23.00
Defines inductance and explains its cause and effect in an AC circuit. Illustrates inductive reactance, the factors that affect inductive reactance in an AC circuit, and the phase relationship between current and voltage as a result of the presence of inductance in the circuit.

■ **Basic DC Meter Movement**
16mm film, 3 min, b/w, 1954
Title No. 161500/HH $10.00
Shows a representative meter, describes its essential components, and explains its functions.

■ **Current Flow, What It Is**
16mm film, 4 min, b/w, 1954
Title No. 252850/HH $13.25
Shows why electrons move in chain reactions, how electrons move within a wire, and what determines the amount of current.

■ **Direct Current Generators—Theory of Operations**
16mm film, 15 min, b/w, 1959
Title No. 273238/HH $49.50
Shows the basic components of a generator and explains EMF of self-induction.

■ **Electromagnets**
16mm film, 3 min, b/w, 1954
Title No. 295550/HH $10.00
Shows how a magnetic field can induce current. Discusses the components of an electromagnet, explaining how its strength can be varied.

■ **The Electron Theory**
16mm film, 5 min, b/w, 1954
Title No. 001649/HH $16.50
Shows the orbit of electrons around a representative atom, normal electron motion, and an outside force producing electron motion in one direction, or current flow. Depicts the symbols used for neutral atom, electron, and atom with one positive charge.

■ **How Magnets Produce Electricity**
16mm film, 4 min, b/w, 1954
Title No. 403250/HH $13.25
Shows the use of a magnetic field as it effects a single atom, a group of atoms as in a wire, and a wire in a closed circuit with a meter.

■ **Theory of the Lead-Acid Storage Battery**
16mm film, 25 min, b/w, 1959
Title No. 741750/HH $82.50
Shows in detail, by use of animation, how chemical energy is converted into electrical energy to produce electromotive force.

■ **What Causes Current Flow—EMF**
16mm film, 3 min, b/w, 1954
Title No. 801875/HH $10.00
Shows an outside force converted into electrical force of attraction. Points out that in a circuit the electrical forces of attraction and repulsion taken together are called electromotive force.

■ **What Controls Current Flow—Resistance**
16mm film, 4 min, b/w, 1954
Title No. 802010/HH $13.25
Shows the symbol for resistance to current flow, the atomic basic for resistance in materials, and the effect of the use of a resistor in a circuit.

Capacitance, Physical and Electrical Characteristics and Factors Effecting Capacitance
16mm Film, 29 min, b/w, 1965
Producer USA
Title No. 001643/HH $95.75
Explains the characteristics, applications, functions, and effects on capacitance or electronic circuits.

Electric Power Generation in Space
16mm Film, 27 min, colo , 1967
Producer USNASA
Title No. 293625/HH $156.50
Shows the wide range of power requirements for space exploration and the need for absolute trouble-free operation. The methods by which electric power has been provided are shown, including the battery, solar cell, and fuel cells. For the high power levels needed in the future, the various methods of using atomic energy are shown, including two of generating heat and four of converting heat in electricity.

Electric Propulsion
16mm Film, 24 min, color, 1965
Producer USNASA
Title No. 293650/HH $139.25
Filmstrip, 110 fr, with script
Title No. 008940/HH $10.00
Illustrates what electric propulsion is, how it works, and why it is needed; and explores future use of electric propulsion in manned and unmanned space missions.

Elementary Electricity
7 16mm Films
Producer USN

■ **Amperes, Volts, and Ohms**
16mm film, 8 min, b/w, 1947
Title No. 133550/HH $26.50
Explains the meaning, relationship, and measurement of amperes, volts, and ohms.

■ **Capacitance**
16mm film, 31 min, b/w, 1944
Title No. 198549/HH $102.25
Demonstrates electron flow through a circuit, the charging and discharging of condensers, variations of a charge on a condenser in relation to time, and the behavior of capacitance with alternating current.

■ **Current and Electromotive Force**
16mm film, 11 min, b/w, 1947
Title No. 252650/HH $36.25
Explains electron theory, the arrangement of molecules, building up of current, conductors, electromotive force, resistance, and chemical and mechanical sources of electromotive force.

■ **Inductance***
16mm film, 31 min, b/w, 1947
Title No. 424450 $102.25
Shows how a magnetic force reacts around a coil, the nature of self-inductance, and how to increase the inductance of a coil.

■ **Oscillators**
16mm film, 13 min, b/w, 1947
Title No. 571700/HH $43.00
Explains the basic principles of electronic oscillation.

■ **Series and Parallel Circuits**
16mm film, 8 min, b/w, 1947
Title No. 677900/HH $26.50
Illustrates series and parallel circuits, explaining current flow and voltage drop across each lamp.

■ **Vectors**
16mm film, 12 min, b/w, 1945
Title No. 780900/HH $39.50
Explains vectors, changes in angle or magnitude, how vectors are plotted, and how the resultant is found.

**This kinescope film has been declared obsolete for use within the Department of Defense, but may have other content value for educational use.*

Engineering/Electronics—A Series
4 16mm Films, b/w, 1945
Producer USOE
Series No. 007584/HH $204.50

■ **The Diode—Principles and Applications**
16mm film, 17 min, b/w,
Title No. 273250/HH $56.00
Explains the principles of electron flow across a gap, basic features of the diode tube, control of electron flow in the tube, photo-electric cells, x-ray tubes, and the diode as a rectifier.

■ **The Electron—An Introduction**
16mm film, 16 min, b/w
Title No. 296075 $52.75
Describes the nature of electrons; electron flow in solid conductors; electromotive force; types and control of electron flow; electron flow and magnetic fields; and induced electron flow.

■ **The Triode—Amplification**
16mm film, 14 min, b/w
Title No. 760660/HH $46.25
Discusses the diode and triode, electric fields, triode amplifier circuit, amplification of DC voltage changes, alternating voltages, distortion, and amplification of audio frequency signals.

■ **Principles of Gas-Filled Tubes**
16mm film, 15 min, b/w
Title No. 619400/HH $49.50
Explores the theory of ionization applied to gas-filled tubes and control of current in circuits employing gas-filled tubes.

Frequency Modulation, Basic Principles
16mm Film, 26 min, b/w, 1964
Producer USA
Title No. 001711/HH $85.75
Explains the basic principles of FM radio communication using animation and block diagrams.

High Frequency Wave Propagation
16mm Film, 19 min, color, 1973
Producer USA
Title No. 007290/HH $110.25
Reviews the mechanics of radio waves and shows the types of waves. Describes the principles of scattering, refraction, and ionization. Explains the layers of the atmosphere, concentrating on the sublayers of the ionosphere. Shows good frequency management in getting the best possible radio communications.

The Junction Transistor
16mm Film, 28 min, color, 1967
Producer USN
Title No. 002483/HH $162.50
Demonstrates transistor and diode action; electron flow; bias and amplifier circuits; and gain and phase relationships.

Motors and Generators
2 16mm Films, b/w, 1961
Producer USA

■ **Motors and Generators, Part 1**
DC Motors and Generators
16mm film, 35 min, b/w
Title No. 002562/HH $115.50
Describes the construction, uses, and principles governing the operation of DC motors and generators.

■ **Motors and Generators, Part 2**
AC Motors and Generators
16mm film, 25 min, b/w
Title No. 534801/HH $82.50
Describes the design, characteristics, and operation of AC generators and motors.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Ohm's Law
16mm Film, 21 min, b/w, 1964
Producer USA
Title No. 563800/HH $69.25
Presents a brief study of electronics, with particular focus on the theory and application of Ohm's law.

Principles of Electricity
31 Kinescope Films
Producer USAF

■ **Amplifier Principles**
16mm film, 35 min, b/w, 1965
Title No. 133714/HH $115.50
Identifies and compares voltage and power amplifiers. Explains Class A, AB, B, and C amplifiers as to their operating point on the characteristic curve as determined by their bias. Discusses the third method of classifying amplifiers. Compares the efficiency and fidelity of each class of amplifier, and gives the configuration of the three types of amplifier circuits.

■ **Antennas***
16mm film, 32 min, b/w
Title No. 140535/HH $105.50
Defines antennae and explains the physical construction and the electrical characteristics of a single dipole antenna. Describes half and quarter wave antennas. Defines induction fields and radiation fields.

■ **Basic Circuit Symbols and components–Battery Circuits***
16mm film, 23 min, b/w
Title No. 161492/HH $76.00
Demonstrates connecting batteries in series, parallel, and combinations of series and parallel. Illustrates schematic representations of each combination and explains the method of calculating the total voltage and current for each combination.

■ **Bridge Rectifiers**
16mm film, 34 min, b/w, 1965
Title No. 187707/HH $112.25
Traces the development of the bridge rectifier, showing how the output voltage is affected by various rectifier configurations. Components are identified and labeled; current flow is traced and output waveshape is shown, using a trainer and oscilloscope; circuit voltages are computed; symptoms of malfunction are illustrated, using the trainer and oscilloscope; and probable causes of these symptoms are discussed.

■ **Capacitors**
16mm film, 38 min, b/w, 1971
Title No. 198600/HH $125.50
Defines electrostatic fields and dielectrics. Describes the construction and use of air, paper, oil, electrolytic, and ceramic type capacitors; measuring capacitance, the farad, and computing capacitance. Discusses dielectrics, plate area, distance between plates, and the effect on capacitance. Explains voltage ratings and factors which effect the voltage ratings of capacitors.

■ **Capacitors—DC-AC Action**
16mm film, 20 min, b/w
Title No. 198602/HH $66.00
Describes the action of a capacitor when DC is applied and when AC is applied. Describes and illustrates the phase relationship between voltage and current in a capacitor when AC is applied. Compares the voltage and current relationship in an inductive and capacitive circuit.

■ **Capacitors—Reactance and Total Capacitance***
16mm film, 26 min, b/w
Title No. 198605/HH $85.75
Defines capacitive reactance and gives its symbol. Gives the formula for, and various examples of, computer capacitive reactance when frequency and capacitance are known. Shows the method of solving for total capacitance in both series and parallel circuits.

■ **Diodes and Rectifier Circuits—Solid State Principles**
16mm film, 20 min, b/w, 1967
Title No. 005570/HH $66.00
Explains the principles of AC and DC current in solid state diodes and rectifiers. Uses schematics to show resistance and voltage flow. Reviews chemical and material makeup of donor and acceptor atoms. Also defines conductors, semiconductors, and insulators.

■ **Diodes and Rectifier Circuits—Solid State Diodes**
16mm film, 27 min, b/w, 1970
Title No. 001552/HH $89.00
Explains the joining of Pform, a solid state diode; and gives the types of diodes. Identifies the two elements of a junction diode as the emitter and collector. Discusses the effect of excessive forward or reverse bias.

■ **Electromagnetism***
16mm film, 25 min, b/w
Title No. 295275/HH $82.50
Demonstrates the characteristics of electromagnetism with iron filings and a compass. Shows the left hand rule for determining current flow in an electromagnet. Illustrates the use of a dot and a cross to designate current flow.

■ **Electrostatic Principles—Atomic Structure of Matter***
16mm film, 30 min, b/w, 1964
Title No. 001654/HH $99.00
Defines matter and discusses the various states of matter. Also defines elements, compounds, atoms, and molecules.

■ **Electrostatic Principles—Charged Bodies***
16mm film, 29 min, b/w, 1962
Title No. 001655/HH $95.75
Relates the effect of charged bodies to each other, and lists the three possible electrical conditions of a charged body. States and discusses the law of attraction and repulsion between charged bodies.

■ **Electrostatic Principles—Conductors and Insulators***
16mm film, 18 min, b/w, 1962
Title No. 001656/HH $59.50
Discusses the atomic construction of conductors and then defines conductor in these terms. Identifies the materials which comprise conductors.

■ **Feedback***
16mm film, 35 min, b/w
Title No. 321325/HH $115.50
Discusses the effects of regenerative and degenerative feedback on amplifier circuits. Lists three common methods of obtaining degenerative feedback, and shows input and output signals. Defines neutralization, and discusses methods used to neutralize.

■ **Introduction to Amplitude Modulation***
16mm film, 26 min, b/w
Title No. 002433/HH $85.75
Gives a brief history of major developments in the communications field to point out why amplitude modulation came into being. Explains how intelligence can be transmitted by amplitude modulating a high frequency wave with an intelligence signal.

■ **Introduction to Heterodyning***
16mm film, 35 min, b/w, 1963
Title No. 002443/HH $115.50
Defines the terms heterodyning, local oscillator, and mixer. Shows a mixed wave constructed graphically, discusses how frequencies are produced by beating two signals together, and demonstrates the heterodyning of two sound waves.

■ **Introduction to Receivers**
16mm film, 23 min, b/w, 1965
Title No. 002718/HH $76.00
Identifies each block in a block diagram of a superheterodyne receiver. Discusses the purpose of each stage and shows output signals from each stage on an oscilloscope.

■ **Introduction to Single Sideband**
16mm film, 25 min, b/w
Title No. 002454/HH $85.75
Compares a conventional amplitude modulated wave to the single sideband wave, through the use of an oscilloscope and associated equipment. Explains the characteristics of single sideband communication, and gives the two requirements of a single sideband transmitter.

■ **Ohm's Law***
16mm film, 20 min, b/w
Title No. 000634/HH $66.00
Defines Ohm's law, and discusses three forms of the formula. Demonstrates methods of finding current voltage, or resistance, when the other two quantities are known.

■ **Oscilloscopes—Frequency and Measurement**
16mm film, 21 min, b/w
Title No. 003834/HH $69.25
Shows on an oscilloscope screen various waveships of different frequencies, amplitudes, and phase relationships. Gives the general operation of the oscilloscope to find frequency and voltage amplitude.

■ **Parallel RC, RL, and RCL Circuits*—Graphic Solutions**
16mm film, 32 min, b/w
Title No. 002759/HH $105.50
Uses Ohm's law and vectors to show how to solve for branch current, total current, total impedance, and phase angle in parallel RC, RL, and RCL circuits.

■ **Parallel RC, RL, and RCL Circuits*—Triconometric Solutions***
16mm film, 39 min, b/w, 1968
Title No. 002761/HH $128.75
Shows how parallel RC, RL, and RCL circuit values are computed by trigonometric functions; first determining the phase angle, and then computing them. Presents the procedure of solving for total impedance by Ohm's law.

■ **Parallel Resistive Circuits***
16mm film, 33 min, b/w
Title No. 002760/HH $109.00
Explains and shows the requirements for a parallel circuit. Points out the relationship of the voltage across each parallel branch and explains how to measure and compute the voltage across each branch, as well as the total voltage.

■ **Series RC, RL, and RCL Circuits***
16mm film, 37 min, b/w
Title No. 003445/HH $122.00
Explains what a vector quantity is. Demonstates the manner in which reactive circuits differ from resistive circuits. Explains why this difference exists and how it affects such factors as impedance and phase angle.

■ **Series RC, RL, and RCL Circuits—Trigonometric Solutions***
16mm film, 40 min, b/w
Title No. 003446/HH $132.00
Explains the method of solving for the phase angle and impedance by the use of trigonometric functions. Shows use of trigonometric tables. Gives problems requiring Z to be determined when XC or XL is known.

■ **Series Resistive Circuits—DC Power***
16mm film, 29 min, b/w
Title No. 003448/HH $95.75
Defines electrical power in terms of work and rate. Discusses the three formulas for computer power—power equals voltage times current; power equals current squared times resistance; and power equals voltage squared divided by resistance. Gives problems to solve, using the power formulae.

■ **Series Resistive Circuits—Troubleshooting***
16mm film, 35 min, b/w
Title No. 678015/HH $115.50
Discusses the process of locating faults or troubles in a circuit. Shows how opens are located by use of a voltmeter and ohmmeter, and emphasizes the symptoms. Discusses shorts, points out the symptoms, and demonstrates the procedure for locating shorts with a voltmeter.

■ **Series Resonant Circuits***
16mm film, 31 min, b/w
Title No. 678020/HH $102.25
Calculates the resonant frequency of a series RCL circuit; compares the magnitude of current and impedance; and vectorially analyzes the series RCL circuit as capacitive, inductive, or resistive.

■ **Series-Parallel Resistive Circuits—Circuit Analysis***
16mm film, 40 min, b/w, 1965
Title No. 078025/HH $132.00
Shows various combinations of series, parallel, and series-parallel circuits. Explains how to identify the type of circuit. Shows how to solve for resistance, voltage, and current.

■ **Symbols and Components**
16mm film, 33 min, b/w, 1965
Title No. 161490/HH $109.00
Describes and illustrates a practical electrical circuit with symbols used to represent the electrical components and measuring instruments. Explains electrical grounds, gives fuses and switches. Gives the uses, symbols, and descriptions of various electrical measuring instruments. Shows examples of circuit schematic diagrams.

■ **Transformers***
16mm film, 30 min, b/w, 1957
Title No. 003744/HH $99.00
Defines transformer action, step-up and step-down turns ratio, and coefficient of coupling. Illustrates the relationship between the magnitude of voltage and current in a transformer.

**This film has been declared obsolete for use within the Department of Defense, but may have other content value for educational use.*

Videocassette and Super 8mm
Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Electrical Work Program
3 16mm Films, b/w, 1945
Producer USOE

■ **Rotating Magnetic Fields**
16mm film, 13 min, b/w
Title No. 656700/HH $43.00
Explains a rotating magnetic field pattern, three-phase windings in a demonstration stator, factors that cause rotation of the magnetic field, and the construction of polyphase motors.

■ **Split-Phase Motor Principles**
16mm film, 17 min, b/w
Title No. 000685/HH $56.00
Shows construction of stator and rotor, comparison of winding in two-phase stator with split-phase stator, effects of winding resistances and inductive reactances, and use of capacitor to produce phase displacement.

■ **Wire Sizes and Voltage Drop**
16mm film, 13 min, b/w
Title No. 816250/HH $43.00
Discusses factors influencing the ability of conductors to carry electron flow, measurement of wire size, voltage drop, and Ohm's law.

Space Communications
16mm Film, 19 min, color, 1960
Producer USAF
Title No. 009498/HH $110.25
Highlights basic principles and techniques of communications, stressing those factors that relate directly to space. Explains behavior of electromagnetic waves and formulae for computing their attenuation rate.

Energy 6

Challenge of the Future
16mm Film, 29 min, color, 1975
Sponsor USDOE Producer USERDA
Title No. 007707/HH $168.25
Reviews the problems and options which face the U.S. in meeting the growing energy crisis, demonstrating that with the escalating cost of petroleum and the diminishing supply, we must shift to other sources of energy for the future. Visits the laboratories and pilot plants in the energy research and development centers across the country. Discusses solar, geothermal, and advanced energy systems, nuclear energy, energy conservation, the environment, and safety.

Energy—The American Experience
16mm Film, 29 min, color, 1976
Sponsor USDOE Producer USERDA
Title No. 007706/HH $168.25
Shows the development of different forms of energy under the unique conditions of the American experience. Depicts the 60–year changing cycles of energy sources from wood to coal to oil and gas, and demonstrates that the fuels Americans thought inexhaustible are being used too rapidly. Discusses how to plan the best use of present resources and mobilize science and industry to develop new sources and choices of energy.

Energy—Critical Choices Ahead (General Ed.)
16mm Film, 19 min, color, 1974
Sponsor USDOE Producer USERDA
Title No. 009381/HH $125.00
Analyzes how energy is used in the U.S., citing the problems involved in extending the same use patterns into the future. Describes the dimensions of the energy problems we face in America today.

Energy—A Family Album
16mm Film, 9 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010435/HH $52.25
A brief history of energy in America follows with some details of the Nation's plan to keep ahead of energy demands, alternate sources of fuel, geothermal, and solar power.

Geothermal—Nature's Boiler
16mm Film, 7 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010436/HH $40.50
Natural heat energy stored in and under the Earth's crust can be put to work; just as geysers now supply half the electricity for San Francisco's needs, these reservoirs may heat, cool, and light homes and factories across the country.

TIC—Index to Energy
16mm Film, 6 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010434/HH $34.75
A visit to a computerized facility that gathers, abstracts, and catalogues technical reports and published scientific papers from around the world at the rate of roughly one million per second.

When the Circuit Breaks—America's Energy Crisis
16mm Film, 28 min, color, 1975
Sponsor USDOE Producer USFEA
Title No. 009469/HH (English) $162.50
Title No. 007890/HH (Spanish) $162.50
Shows how America's energy crisis happened and what possibilities the future holds. Examines some solutions available through the development of coal, oil, and natural gas resources. Looks at nuclear, geothermal, and solar energy sources which could be developed. Stresses the importance of conserving energy at home, in transportation, in business, and in industry.

Solar Energy

Solar Energy—Ready When You Are
Slide Set, 140 color slides, 16 min audiocassette, 1977
Sponsor USDOE Producer USFEA
Title No. 008901/HH $28.00
Presents an overview of the stage of development of solar energy, and discusses its advantages.

Sun Power for Farms
16mm Film, 12 min, color, 1977
Sponsor USDOE Producer USDA
Title No. 008922/HH $69.50
American farmers may soon begin to harness the sun in new ways. The potential of solar heating for agricultural production is enormous; this film shows how some of that potential is being realized through a series of research projects explained by the scientists themselves: a greenhouse heating system for nights and cloudy days, "solar ponds" of saltwater for storing heat, rooftop solar collectors for warming poultry houses and milking parlors, a system for drying and curing peanuts and corn.

Look To The Sun
16mm Film, 12 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010055/HH $69.50
Explains the principle of a sunlight collector and solar heat system. Also shows the varied interests solar heat involves: business, education, research, and construction.

Here Comes The Sun
16mm Film, 15 min, color, 1974
Sponsor USDOE Producer USERDA
Title No. 004161/HH $87.00
Shows how solar energy can be used as an important asset in helping to relieve the energy crunch. Explains the principles of the operation of the sun collector and the solar energy system.

Putting the Sun to Work
16mm Film, 5 min, color, 1974
Sponsor USDOE Producer USERDA
Title No. 007725/HH $29.00
Demonstrates that the reservoir of energy on Earth originated from the Sun. Explains the principle of solar energy and details the research on conversion of solar energy at the University of Arizona.

Skylab and the Sun
16mm Film, 13 min, color, 1976
Producer USNASA
Title No. 010056/HH $75.50
Shows how we can use information learned about the Sun to our advantage. Presents information gathered by the Skylab missions on the behavior of the Sun, solar energy, plasma flow, and mass/thermal transfer. Includes comments from Skylab principal investigators.

Energy Conservation

Challenge of the Future
16mm Film, 29 min, color, 1975
Sponsor USDOE Producer USERDA
Title No. 007707/HH $168.25
Reviews the problems and options which face the U.S. in meeting the growing energy crisis. Demonstrates that with the escalating cost of petroleum and the diminishing supply, we must shift to other sources of energy for the future. Visits the laboratories and pilot plants in the energy research and development centers across the country. Discusses solar, geothermal, and advanced energy systems, nuclear energy, energy conservation, the environment, and safety.

Conservation—Investing in Tomorrow
16mm Film, 7 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010433/HH $40.50
Some of the ways we can save energy now: more efficient machines and industrial processes, improving the transmission of electric power, new autos, making homes and other buildings energy efficient.

A Conversation with M. King Hubbert
16mm Film, 38 min, color, 1976
Producer AHOA Sponsor USHRAC
Title No. 007797/HH $220.50
Presents Dr. M. King Hubbert, a scholar and authority on fuel and energy, explaining the limits of our fossil fuel supply and the impact of coming energy problems on health care institutions.

Don't Cut Us Off
16mm Film, 16 min, color, 1976
Sponsor USDOE Producer USFEA
Title No. 010257/HH $92.75
Documents the activities of American communities in their attempts at solving a common national problem: the high cost of energy and fuel as it affects the poor and elderly segments of society. Featured are dedicated citizens who have cared and taken action to help their less fortunate neighbors in Jacksonville, FL; Santa Fe, NM; and Trenton, MO.

Energy—The American Experience
16mm Film, 29 min, color, 1976
Sponsor USDOE Producer USERDA
Title No. 007706/HH $168.25
Shows the development of different forms of energy under the unique conditions of the American experience. Depicts the 60-year changing cycles of energy sources from wood to coal to oil and gas, and demonstrates that the fuels Americans though inexhaustible are being used too rapidly. Discusses how to plan the best use of present resources and mobilize science and industry to develop new sources and choices of energy.

The Energy Ant
Sound Filmstrip Set, 1977
2 color filmstrips, audiocassettes, guide
Sponsor USDOE Producer USFEA
Title No. 008921/HH $12.50
Presents Energy Ant, a cartoon character who describes the various aspects of energy. Discusses what it is, where it comes from, how we use it, and how it can be saved.

Great Gas Save-In
16mm Film, 13 min, color, 1975
Producer USPOST
Title No. 009961/HH $75.50
Shows logical methods for gasoline conservation by both vehicle drivers and fleet operators. Offers general applicability to any large business, government office, or individual interested in gasoline conservation.

It's Dollars and Sense
16mm Film, 28 min, color, 1976
Producer USHRA
Title No. 007893/HH $162.50
Explains how the steps taken to reduce the use of energy have resulted in substantial dollar savings without affecting the quality of patient care. Also explains load-shedding practices; heating and ventilation practices; efficiency testing and equipment maintenance; lighting; new innovations and designs; and other measures which can be applied by hospitals interested in stretching their budgets by conserving energy.

No Fuelin' . . . We're Poolin'
16mm Film, 8 min, color, 1976
Producer DVRPC Sponsor USUPD
Title No. 008639/HH $46.50
Describes the role of the employer in vanpool programs, including carpool matching, driver selection, and determining fares. Explains the concept of employer-sponsored vanpooling programs, and encourages employees to participate in the program.

Reserved for Tomorrow
16mm Film, 13 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010322/HH $75.50
The sites in Louisiana and Texas where the United States will store one billion barrels of crude oil by 1985 in underground salt domes.

Transportation–The Way Ahead
16mm Film, 8 min, color, 1977
Sponsor USDOE Producer USERDA
Title No. 010437/HH $46.50
With gasoline in short supply, the Federal Government is looking at new energy sources for automobiles.

Up the Power Curve
16mm Film, 10 min, color 1976
Sponsor USDOE Producer USFEA
Title No. 008920/HH $58.00
Shows the practicality of energy conservation and the important role it plays in helping solve some of America's energy problems. The film covers a wide range of energy-saving ideas and the dollar savings that can be achieved when they are put into practice.

When the Circuit Breaks—America's Energy Crisis
16mm Film, 28 min, color, 1975
Sponsor USDOE Producer USFEA
Title No. 009469/HH (English) $162.50
Title No. 007890/HH (Spanish) $162.50
Shows how America's energy crisis happened and what possibilities the future holds. Examines some solutions available through the development of coal, oil, and natural gas resources. Looks at nuclear, geothermal, and solar energy sources which could be developed. Stresses the importance of conserving energy at home, in transportation, in business, and in industry.

Nuclear Energy

An Added Sense—The Detection of Nuclear Radiation
16mm Film, 25 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 003512/HH $163.00
Presents significant concepts associated with radiation detector technology, such as the various forms of nuclear radiation; gas ionization chambers and their design; proportional and scintillation counters; and several unique methods, including thermoluminscence.

Basic Principles of Power Reactors
16mm Film, 9 min, color, 1962
Sponsor USDOE Producer USAEC
Title No. 001446/HH $78.00
Discusses, through animation, nuclear power reactors and how they produce steam for the generation of electricity. Describes fission and controlled chain reactor components. Shows core, reactor vessel, shielding, moderators, coolants, and control rods.

The Bioengineers
16mm Film, 14 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005048/HH $81.25
Explores the exciting new combinations of biology and engineering at Oak Ridge National Laboratory, with special emphasis on the investigation of human cells.

Building an Atomic Accelerator
16mm Film, 30 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005360/HH $195.50
Describes the five basic parts of the atomic accelerator. Uses animation to explain some of the more important construction details, the theory of how accelerators work, and the functions of various parts of the accelerator.

Endless Chain
16mm Film, 28 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 002078/HH $162.50
Demonstrates the work done by the U.S. Atomic Energy Commission at its Ecological Study Sanctuary in southeastern Washington State. Speaks of the ceaseless cycle of birth and death and the endless chain of vital forces that begins with the Sun's energy.

The Fifth Fuel
16mm Film, 22 min, color, 1967
Sponsor USDOE Producer USAEC
Title No. 000599/HH $127.50
Describes the fuel uranium and how it has become a useful source of energy. Explains the steps involved in preparing enriched uranium, from the mining operation through the exacting chemical and metallurgical processes, to the extrusion of precisely structured fuel elements. Points out how such fuel cores are used to transmute uranium-238 into plutonium at production reactor sites.

Electric Power Generation in Space
16mm Film, 27 min, color, 1967
Producer USNASA
Title No. 293625/HH $156.50
Shows the wide range of power requirements for space exploration and the need for absolute trouble-free operation. The methods by which electric power has been provided are shown, including the battery, solar cell, and fuel cells. For the high power levels needed in the future, the various methods of using atomic energy are shown, including two of generating heat and four of converting heat into electricity.

In Search of a Critical Moment
16mm Film, 28 min, color, 1970
Producer USAEC
Title No. 000479/HH $162.50
Uses animated sequences to illustrate the zero power plutonium reactor, a special split-table test reactor that supplies information which is essential to economic, fast breeder, central station nuclear power plants.

Isotopes in Environmental Control
16mm Film, 17 min, color, 1971
Producer USAEC
Title No. 007062/HH $98.50
Shows some of the ways in which radioactive atoms are being used to help man preserve and restore his environment.

Nuclear Fingerprinting of Ancient Pottery
16mm Film, 20 min, color, 1970
Sponsor USDOE Producer USAEC
Title No. 000476/HH $135.50
Uses animation to show the techniques and research which are used in identifying pottery through chemical and nuclear analysis. Explains the importance of this process in dating pottery and in determining its place of origin.

Nuclear Innovations in Process Control
16mm Film, 17 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 558936/HH $98.50
Depicts the great versatility and sophistication of nuclear methods that now are available for the control of industrial processes and for nondestructive testing. Gives specific examples of industrial applications.

Nuclear Power and the Environment
16mm Film, 14 min, color, 1969
Producer USAEC
Title No. 558924/HH $81.25
Dramatizes the problems that stem the growing demands for electricity in the U.S.—demands that are doubling every ten years. To meet these future needs, the most practical means of producing power in large amounts is to build steam-powered electrical power plants—both fossil fuel and nuclear. The great care taken in studying and controlling effects of nuclear power plants on the environment is discussed. Environmental surveys are conducted to predict and control effects on fish life, ecology, and hydrology.

Nuclear Propulsion in Space
Filmstrip, 77 Fr, silent, color, 1968
Producer USNASA
Title No. 007393/HH $10.00
Shows why the U.S. needs to develop the nuclear rocket and how the nuclear engine will work. Shows how a combination of nuclear and chemical rocket stages might be used in a manned mission to Mars.

Nuclear Spectrum, 1973
16mm Film, 28 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005062/HH $162.50
Discusses nuclear research and development and shows how it brings about many spinoff applications.

Safety—Second to None
16mm Film, 14 min, color, 1974
Sponsor USDOE Producer USAEC
Title No. 009105/HH $81.25
As the watchdog over the nuclear power industry, the Government takes great care to see that plants are made extraordinarily safe, that no shortcuts are ever taken that might threaten the public health or safety.

The Sea We Cannot Sense
16mm Film, 27 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005064/HH $156.50
Everything in nature can be seen or felt—wind, light, cold, texture—that is, everything except radiation. This is the sea we cannot sense.

Space and the Atom
16mm Film, 27 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 007071/HH $156.50
Reports on many of the successes of nuclear energy in space, such as the SNAP (Systems for Nuclear Auxiliary Power) generators. Delineates the joint efforts of the U.S. Atomic Energy Commission and NASA to develop a nuclear rocket engine. Depicts the future role of nuclear energy in space exploration.

To Imitate the Sun
16mm Film, 33 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 007072/HH $191.50
Shows controlled thermonuclear research over two decades. Includes descriptions of four major American fusion devices—Two x Two, Scyllac, Astron, and Ormak. Also discusses the modeling of plasma.

The Ultimate Energy
16mm Film, 28 min, color, 1976
Sponsor USDOE Producer USERDA
Title No. 008861/HH $162.50
A film on the search for fusion power visits five major fusion research laboratories where we hear many physicists who have dedicated their research lives to the goal of imitating the sun in the research laboratory. This science puzzle has eluded scientists since 1950.

Fusion

Challenge of the Future
16mm Film, 29 min, color, 1975
Sponsor USDOE Producer USERDA
Title No. 007707/HH $168.25
Reviews the problems and options which face the U.S. in meeting the growing energy crisis, demonstrating that with the escalating cost of petroleum and the diminishing supply, we must shift to other sources of energy for the future. Visits the laboratories and pilot plants in the energy research and development centers across the country. Discusses solar, geothermal, and advanced energy systems, nuclear energy, energy conservation, the environment, and safety.

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History

The Atom Strikes
16mm Film, 25 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 001434/HH $102.25
Gives an account of the first experimental atomic bomb blast in New Mexico, aerial views of Hiroshima and Nagasaki bombings, and close-up shots of devastated areas.

The Atom—Year of Purpose
16mm Film, 29 min, color, 1969
Producer USAEC
Title No. 151654/HH $168.25
Describes 17 major developments in the peaceful uses of the atom.

Atomic Power Today—Service with Safety
16mm Film, 15 min, color, 1967
Producer USAEC
Title No. 001459/HH $87.00
Explains the growing need for electricity and contrasts conventional methods of generating electricity with nuclear methods. Pictures how a nuclear power plant is designed, built, and operated for safe, dependable service.

The Atomic Search
16mm Film, 29 min, color, 1970
Producer USAEC
Title No. 153114/HH $168.25
Presents the story of some of the contributions scientists made in 1969 to the peaceful uses of nuclear power.

Desalting the Seas
16mm Film, 17 min, color, 1967
Producer USAEC
Title No. 001533/HH $98.50
Describes the various methods of purifying saline waters through the use of nuclear energy, with particular emphasis on large-scale, dual-purpose, nuclear-electric desalting plants which purify water and produce large amounts of electric power simultaneously.

The First Twenty-Five Years
16mm Film, 29 min, color, 1973
Sponsor USDOE Producer USAEC
Title No. 005391/HH $189.00
Concentrates on the development of the first atomic bomb (1945) and the first hydrogen bomb (1952). Gives an historical perspective on the role played by the Los Alamos Scientific Laboratory in the development and advancement of the nuclear age. Deals with the remarkable group of scientists gathered at Los Alamos by Dr. Robert Oppenheimer.

Hanford or Bust: 7000 Miles for Energy
16mm Film, 29 min, color, 1975
Sponsor USDOE Producer USERDA
Title No. 009825/HH $168.25
This film is the story of the river-and-sea voyage of a giant: the largest stainless steel nuclear reactor vessel—890 tons of hardware—ever made. We follow the unique 30 day journey from Chattanooga, Tennessee, to Richland, Washington, via the Mississippi River, through the Panama Canal, up the Pacific Ocean and into the Columbia River. Although primarily an entertainment travelogue, the film also gives some brief key facts about the breeder program and the vital testing necessary to make the next generation of power-producing nuclear reactors a reality.

The HWCTR, and the Heavy Water Power Reactor Program
16mm Film, 32 min, color, 1962
Producer USAEC
Title No. 007061/HH $185.50
Shows the Heavy Water Components Test Reactor (HWCTR) constructed at Savannah River Plant. Describes the development program conducted by the Atomic Energy Commission on this reactor concept, which has been proven technically and economically feasible.

A Journal of Plutonium
16mm Film, 47 min, color, 1969
Sponsor USDOE Producer USAEC
Title No. 448345/HH $272.50
Pictures the men and events that led to the discovery, separation, and large scale production of plutonium. Presents the story of the men who discovered plutonium, purified and weighed it, and eventually produced it on a large industrial scale for the wartime Manhattan Project.

Nuclear Power in the United States
16mm Film, 28 min, color, 1971
Producer USAEC
Title No. 000488/HH $162.50
This film describes the entire spectrum of the nuclear power industry including advanced reactor concepts such as liquid metal fast breeder, the high temperature gas cooled reactor, and others.

Operation Crossroads
16mm Film, 27 min, b/w, 1949
Producer USN
Title No. 002542/HH $89.00
Documents a film record of the Able and Baker atomic bomb tests at Bikini.

Opportunity Unlimited—Friendly Atoms in Industry
16mm Film, 29 min, color, 1962
Producer USAEC
Title No. 002727/HH $168.25
Surveys the widespread industrial uses of radioisotopes. Combines animation and live action to explain what radioisotopes are and how they are used to gauge the thickness of nylon cord-rubber ply for automobile tires; sheet plastic; cord-rolled alloy sheets for computers and space-age instruments; as well as to measure fat content, sugar content in applesauce, and moisture content in soil. Investigates industrial radiography with radioisotopes. Explains the use of radioisotope tracers for engine-wear studies, product movement in oil pipelines, and leak detection in pipelines.

The Story of Camp Century—City Under the Ice
16mm Film, 32 min, color, 1961
Producer USA
Title No. 007078/HH $185.50
Shows the planning and construction of Camp Century, a nuclear-powered U.S. Army Arctic Research Laboratory buried below the Greenland ice cap. Describes the planning, installation, testing, and operation of the nuclear power plant which provides electricity and space heating.
This is considered of historical value and does not necessarily reflect current policy or plans of the sponsoring agency.

Environmental Studies 7

Air

Air Pollution and Plant Life
16mm Film, 20 min, color, 1970
Producer USEPA
Title No. 122260/HH $116.00
Slide Set, 80 color slides, audiotape, 1972
Title No. 005543/HH $19.50
Surveys air pollution injury to vegetation across the U.S. by common atmospheric pollutants such as sulfur dioxide, oxides of nitrogen, fluorides, ozone, and pan. Areas of injury surveyed include Tennessee, Alabama, Florida, West Virginia, Maryland, and California.
Recommended for professional groups only.

Air Pollution Control Orientation—A Course
9 Audiocassettes, 60 min ea, 1973
Producer USEPA
Series No. 005116/HH $59.75

Provides a broad understanding of the air pollution field: air pollution law; sources; effects; and control techniques.

- Air Pollutants and Their Control
- Air Pollution Control
- Air Pollution Law
- Air Quality
- Control Technologies
- Effects of Air Pollution
- Enforcements
- Meteorology
- Sampling and Analysis

Air Pollution Effects on Vegetation
Slide Set, 72 color slides, audiotape, 1970
Producer USEPA
Title No. 122272/HH $19.50

Surveys air pollution injury to vegetation across the country by common atmospheric pollutants such as sulfur dioxide, oxides of nitrogen, fluorides, ozone, and pan.

Air Pollution in the New York City–New Jersey Interstate Area
16mm Film, 15 min, color, 1967
Producer USNCAP Sponsor USNMAC
Title No. 122270/HH $87.00

Illustrates the interstate nature of air pollution and deals with two of the major pollutants; sulfur dioxide and carbon monoxide. Includes scenes of the "Thanksgiving Smog Episode" of 1966.

Beware The Wind
16mm Film, 22 min, color, 1967
Producer AIRLIE Sponsor USNMAC
Title No. 172280/HH $127.50

Shows the principal sources of air pollution, including—industrial operations, burning dumps, motor vehicles, and combustion of fossil fuels like coal and oil. Describes the effects of air pollutants on animals, people, and property. Shows the means of applying the available technology to bring about cleaner air.

Birmingham Air Episode
16mm Film, 7 min, color, 1972
Producer USEPA
Title No. 005068/HH $40.50

Describes actions taken by the Environmental Protection Agency to combat an extremely heavy air inversion over Birmingham, AL, in November of 1971. Includes actions resulting in the closing of industrial plants to reduce the air pollution.

CHESS—Community Health Environmental Surveillance System
16mm Film, 19 min, color, 1973
Producer USEPA
Title No. 004655/HH $159.00

Offers an overview of the Environmental Protection Agency's Community Health and Environmental Surveillance System. Shows how CHESS evaluates existing environmental standards and obtains health intelligence for new standards. This film documents the health benefits of air pollution control.

Clean Air Is A Breeze—Airborne Contamination Control Through Laminar Air Flow
16mm Film, 16 min, color, 1965
Sponsor USDOE Producer USAEC
Title No. 001515/HH $92.75

Illustrates common sources of airborne contamination to show that the world is contaminated by a variety of airborne particles. Shows the difficulties of manufacturing precision devices in such a contaminated world, and describes earlier attempts to clean air for industrial processes. Explains the theory and basic operating principles of laminar air flow systems. Shows the variety of laminar air flow devices available, illustrates the application of such devices to industrial processes, research and development problems, and to the field of medical care and medical research.

Collection of Particulate Matter and the Control of Air Pollution
16mm Film, 22 min, color, 1968
Producer USEPA
Title No. 229299/HH $127.50

Shows the basic methods of reducing particulate emission, the mode of operation, and the efficiencies of the equipment involved. Demonstrates the function of five different collection devices. Uses animated sequences to show operation, efficiency, and particulate size.

Does It Have to be This Way
16mm Film, 10 min, color, 1976
Producer USEPAP
Title No. 008597/HH $58.00

Shows, in a humorous manner, how car costs, the demand for energy, and the ulcer rate can be cut. Discusses the importance of clean air. Also stresses the importance of using mass transit, car pools, and other means of transportation.

Cleared for TV.

Eagle's Lament
16mm Film, 21 min, color, 1968
Producer USEPA
Title No. 005069/HH $121.75

Describes various sources or air pollution—factories, industrial complexes, burning dumps, jet aircraft, and automobiles. Presents Arthur Godfrey, who has been able to see the rapid change in air pollution in this country over the past decade.

Effective Stack Height/Plume Rise—Self Instructional Package
Multimedia Kit, 1974
Producer USAPTI
Title No. 009121/HH $38.25

Visually introduces the student to elevated pollutant emissions, and presents the physical principles most important in determining the use of a plume. Instructs the student in the background assumptions, strengths, and weaknesses of several commonly used equations for computing plume rise. Includes a manual describing the use of the package; a sound slide show "Effective Stack Height" with a 50 min audiocassette and 54 color slides; an audiocassette "Plume Rise"; and the book "Plume Rise" by G. A. Briggs. An Air Pollution Control Institute certificate of completion will be awarded if the learner achieves a satisfactory level on the problem sets and returns a critique form included in the package.

Effects of Carbon Monoxide On Human Performance—A Technical Report
16mm Film, 25 min, color, 1973
Producer USEPA
Title No. 003511/HH $163.00

Documents some of the current research being performed by the National Environmental Research Center and other cooperative laboratories on the effects of low levels of carbon monoxide on human performance.

Jet Roar
16mm Film, 14 min, color, 1977
Producer USEPA
Title No. 000511/HH $81.25

Dramatizes the problem and cooperative attack against engines that make too much noise—against airport and airplane operations that make too much noise—against poor land use and faulty construction practices around air centers. The film attempts to convince us that we can take effective action against irritants caused by airports and airplanes.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Ill Winds on a Sunny Day (revised)
16mm Film, 28 min, color, 1966
Producer USSCPW
Title No. 005803/HH $162.50

Reports on the national problem of air pollution and offers suggested solutions. Guide included.

Measurement and Control Techniques for Odorous Compounds
Audiocassette, 90 min, 1975
Producer USAPTI
Title No. 009631/HH $10.00

Discusses modern techniques for detection, measurement, and control of noxious odor compounds. Guide included.

Measures for Air Quality
16mm Film, 4 min, color, 1972
Producer USNBS
Title No. 007831/HH $23.25

Describes new air quality measurement techniques and calibration standards being developed at the National Bureau of Standards to help improve the accuracy of measuring air pollution. Includes the use of a laser to measure air pollution levels, the sulphur dioxide fluorescene detector, and the permeation tube.

Over 10,000 Titles . . .

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For free information, write:

National AudioVisual Center
National Archives and Records Service
General Services Administration
Reference Section HH
Washington, DC 20409

or call: (301) 763-1896

Modeling Photochemical Air Pollution by Computer
16mm Film, 23 min, color, 1974
Producer USNERC
Title No. 009006/HH $133.50

Describes simulating the photochemical system, demonstrates the computer output for the particle-in-cell model. Provides an overview of modeling for air pollution scientists and managers.

The Outer City
16mm Film, 28 min, color, 1976
Producer USEPAP
Title No. 008660/HH $162.50

Gives a look at Long Island, NY, and discusses its early history and the many pollution problems that residents there face today. Also discusses people who wanted to get away from the city and into the country, but found another city instead.

Cleared for TV.

Pollution Below
16mm Film, 14 min, color, 1975
Producer USNASA
Title No. 009583/HH $81.25

Presents the stories of three people far apart, caught up in dangerous situations caused by unexpected pollution.

From the Rediscovery Series

Pollution Solution?
16mm Film, 15 min, color, 1977
Producer USNASA
Title No. 008977/HH $87.00

The film discusses how Landsat's remote sensing capabilities can aid in resolving environmental quality problems. The satellite can locate and monitor strip-mining operations to facilitate land reclamation programs. The satellite helps solve some meteorological mysteries by tracking the path of airborne pollution. It can also monitor the course of industrial wastes and garbage dumped into our lakes, rivers and coastal areas.

The Race for Clean Air
16mm Film, 27 min, color, 1972
Producer USEPA
Title No. 000120/HH $156.50

Shows the 1970 Clean Air Car Race. Discusses the different control systems, different fuels, and different propulsion systems that were entered in the cross-country event.

The Great Clean Air Car Race
16mm Film, 26 min, color, 1970
Producer USEPA
Title No. 000806/HH $150.75

Documents the competition between the exotic and modified vehicles built by students from over 50 colleges, universities, and high schools across the country, to demonstrate ways of reducing air pollution from automobiles.

Tall Stacks
16mm Film, 16 min, color, 1972
Producer USEPA
Title No. 002203/HH $92.75

The film reports on the 5-year study that is investigating the effects of large power plants on the gaseous and particulate concentrations at various elevations and distances from selected tall stacks installations. Meteorological influences are described and demonstrated as a wide variety of complex atmospheric elements that act and interact on the dispersion and dilution of effluents.

Recommended for professional groups only.

Voices
2 16mm Films, color, 1974
Producer USEPA
Title No. 005631/HH (54 min version) $313.25
Title No. 005801/HH (30 min version) $174.00

Documents various environmental actions—the efforts of Clevelanders determined to take part in planning for a new jetport on Lake Erie—the work of farmers in Missouri to protect their land against Government dam builders—and the battle of a gas station operator in Pittsburgh who took on an industrial giant that was polluting his air. Narrated by William Conrad.

Forestry

The Air Force Now, No. 060
16mm Film, 15 min, color, 1974
Producer USAF
Title No. 009174/HH $87.00

Shows foresters working to save endangered wildlife in Louisiana. Covers a special effort to mark alligators, manage deer, and harvest timber in an attempt to restore the forest to its natural condition. Includes a visit with the American advisor to the Royal Thai Air Force, and features the 15th Air Force Band clinic held in California.

A Certain Distance
16mm Film, 29 min, color, 1970
Producer USDA
Title No. 003790/HH $241.25

Covers bark beetle damage in South Dakota, range inventory in Colorado, smog damage to forests in California, and forest inventory in the Mississippi Valley using initial photos from the Apollo IX space orbit. The film can also be useful in a general introduction to the subject of remote sensing from airplanes.

Cradle of Forestry
16mm Film, 21 min, color, 1969
Producer USDA
Title No. 005046/HH $121.75

Describes the introduction of professional forestry into the U.S. by Alvin Schenk and Gifford Pinchot on the Vanderbilt estate in North Carolina, renamed the Pisgah National Forest.

Direct Seeding of Southern Pine
16mm Film, 20 min, color, 1969
Producer USDA
Title No. 003934/HH $188.00

The research leading to the successful direct seeding of southern timberlands is fascinating. At first, birds and rodents ate the seeds, methods of seeding were crude, but important breakthroughs in research solved these problems.

The Eternal Forest
16mm Film, 21 min, color, 1970
Producer USDA
Title No. 003787/HH $121.75

Deals with the popular subject of man and his environment—specifically forests and woodlands. Describes efforts to restore nature's balance with growing awareness of the extent of depletion since the turn of the century. Highlights today's sensible balance between use of our forest's resources and their protection for future generations.

Islands of Green
16mm Film, 24 min, color, 1965
Producer USDA
Title No. 003963/HH $139.25

Sixty years ago, conservationists set aside the National Forests as large islands of green for the American people. Today, increasing pressure for outdoor recreation and conservation education have created a need for small islands of green near urban communities. The National Audubon Society is prepared to assist any community in a plan for a nature conservation center.

Land of the Sky
16mm Film, 13 min, color, 1958
Producer USDA
Title No. 003964/HH $124.75

A show-me trip filmed on the Pisgah National Forest in North Carolina. The General Federation of Women's Clubs see multiple use management on a National Forest for the best utilization of all its resources—timber, water, wildlife, and recreation.

Man Against Fire
16mm Film, 29 min, color, 1969
Producer USDA
Title No. 003969/HH (English) $162.50
Title No. 003798/HH (Spanish) $162.50

Tells the story of Man's fight to save forest resources from destruction by wildfire—by the use of his brain power and experience; muscle power and stamina; and technology and strategy. Federal, State, and local cooperative fire control measures protect our Nation's water supply, timber, wildlife, recreation areas, and scenic wonders of the forests.

Patterns of the Wild
16mm Film, 26 min, color, 1966
Producer USDA
Title No. 003987/HH $150.75

Through the eyes of a wild fox, you see that the wildlife of a forest does not merely live in a forest but is a part of its structure. Outstanding wildlife photography leads you from season to season, it shows what proper wildlife management is doing to make the National Forests more livable for animals and birds, and more enjoyable for people.

Roots of the Nation
16mm Film, 29 min, color, 1976
Producer USFS
Title No. 007862/HH $168.25

Shows how forests have profoundly influenced the development of America.

A Tree is Born
16mm Film, 29 min, color, 1959
Producer USDA
Title No. 001918/HH $251.75

Shows the techniques Forest Service researchers employ to produce hybrid pines through controlled pollination and through the selection of superior pines and use of their natural seed. Shows a pine cone opening and tree seeds germinating and growing.

General Ecology

The Air Force Now, No. 060
16mm Film, 15 min, color, 1974
Producer USAF
Title No. 009174/HH $87.00

Shows foresters working to save endangered wildlife in Louisiana. Covers a special effort to mark alligators, manage deer, and harvest timber in an attempt to restore the forest to its natural condition. Includes a visit with the American advisor to the Royal Thai Air Force, and features the 15th Air Force Band clinic held in California.

The American Island
16mm Film, 29 min, color, 1970
Producer USBOR
Title No. 131820/HH $168.25

Shows one of America's last unspoiled resources, her islands. Indicates how intelligent planning for use provides a variety of recreational activities and protects this environment for future generations. Covers islands from Maine to California, such as Mt. Desert Island, Harkers Island, Isle Royal, and Santa Catalina.

Arctic Laboratory
16mm Film, 28 min, color, 1971
Producer USN
Title No. 005684/HH $162.50

Shows the exploration of the animal, vegetable, and mineral content of the Arctic region.

A Certain Distance
16mm Film, 29 min, color, 1970
Producer USDA
Title No. 003790/HH $241.25

Covers bark beetle damage in South Dakota, range inventory in Colorado, smog damage to forests in California, and forest inventory in the Mississippi Valley using initial photos from the Apollo IX space orbit. The film can also be useful in a general introduction to the subject of remote sensing from airplanes.

Choice Stakes
16mm Film, 10 min, color, 1975
Producer USEPAP
Title No. 009824/HH $58.00

Discusses man's desire for a richer, fuller, material life which inevitably affects the environment. Shows how man must learn to recognize what the choices are and what his decisions will cost him. Animated.

Conservation Vistas
16mm Film, 15 min, color, 1959
Producer USDA
Title No. 003930/HH $124.75

Presents classroom and outdoor activities that add interest to the teaching of conservation. Teachers are introduced to a wide variety of conservation experiences—from those found in their everyday environment to the more ambitious programs of school forests and school conservation camps.

Conversation With A Conservationist
16mm Film, 28 min, color, 1970
Producer USNPS
Title No. 010068/HH $180.00

A discerning profile of the noted industrialist—and conservationist—Frank Masland. Scenes of the wildlife in the Everglades, many photographed by Mr. Masland himself, form a visual backdrop for his views on the delicate balance of nature and man's misuse of his environment.

Desert Stewardship—Natural Resources Management and Conservation
16mm Film, 20 min, color, 1975
Producer USN
Title No. 008567/HH $116.00

Presents an overview of the natural and cultural resources found on the Naval Weapons Center's more than one million acres of ranges. Discusses the Center's philosophy of stewardship of its assets and the management required for compatible range operations. Shows how the outdoor laboratories and ranges are shared with areas of historical Indian carvings, abandoned towns, thermal energy areas, and a fragile desert ecosystem.

Endless Chain
16mm Film, 28 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 002078/HH $162.50

Demonstrates the work being done by the U.S. Atomic Energy Commission at its ecological study sanctuary in southeastern Washington State. Speaks of the ceaseless cycle of birth and death and the endless chain of vital forces that begins with the Sun's energy.

Web of Life—Endless Chain
16mm Film, 28 min, color, 1972
Sponsor USDOE Producer USAEC
Title No. 002225/HH $162.50

A special no-narration version of the motion picture Endless Chain. Uses poetry, music and nature photography to depict the work done by the U.S. Atomic Energy Commission at its ecological study sanctuary in Washington State.

Environmental Education—A Beginning
2 16mm Films, color, 1974
Producer USOE
Title No. 009467/HH (28 min version) $162.50
Title No. 007307/HH (14 min version) $ 81.25

Encourages individual and group activity in the community which will aid in improving the environment. Shows projects being carried on in Tampa, Atlanta, San Francisco, and other areas. Projects range from children studying the environment from swampland boats, to students digging in a bay, and to a girl taking decibel meter readings in the middle of the city.

Environmental Awareness
16mm Film, 5 min, color, 1969
Producer USNPS
Title No. 010072/HH $35.00

An award-winning experimental film using a finger painting art technique to visualize special environmental situations that can make viewers more aware of the immediacy of the environmental problems in our life today.

Award: Plaque for Outstanding Achievement in the Creation of Visual Arts, U.S. Industrial Film Festival

The Environmental School
16mm Film, 8 min, color, 1971
Producer USDA
Title No. 003788/HH $46.50

A series made in the schools of Detroit, Michigan on 'Outdoor Classrooms.' Shows a school with open areas developed to teach children about plants, insects, birds, and animal life. The actual voices of various teachers and students can be heard telling their story.

The Eternal Forest
16mm Film, 21 min, color, 1970
Producer USDA
Title No. 003787/HH $121.75

Deals with the popular subject of man and his environment—specifically forests and woodlands. Describes efforts to restore nature's balance, with growing awareness of the extent of depletion since the turn of the century. Highlights today's sensible balance between use of our forest's resources and their protection for future generations.

The Gifts (Revised edition)
16mm Film, 29 min, color, 1974
Producer USEPA
Title No. 005070/HH $168.25

Documents the American landscape and what has happened to it during the course of the past two and one-half centuries. Discusses our legacy of clean water, pure air, and virgin land—a legacy that is threatened.

Glacier Bay—The Grand Design
16mm Film, 17 min, color, 1975
Producer USNPS
Title No. 010086/HH $110.00

Magnificent photography in this Alaskan wilderness area explains the succession of plant and animal life following the retreat of a glacier. From lichen to climax forest and the abundance of animal and bird life, the film is rich in the scenic beauty of this remote National Park site.

Here We Are
16mm Film, 6 min, color, 1969
Producer USNPS
Title No. 010093/HH $40.00

The problems man has imposed upon his environment—and a solution—are cleverly illustrated with interesting art techniques to stimulate discussion on the direct relationship of man with his environment.

Award: CINE Golden Eagle

The Incredible Wilderness
16mm Film, 10 min, color, 1973
Producer USNPS
Title No. 010095/HH $65.00

Colorful views of the rich panorama of the back-country of Olympic National Park . . . the Olympic rain forest, high snow-capped peaks with breathtaking views and fields of wildflowers blooming in the early summer, and a splendid island-studded coastline.

Land of the Bighorn
16mm Film, 12 min, color, 1973
Producer USNPS
Title No. 010101/HH $75.00

This film contains a sensitive depiction of the Crow Indian attitude towards the land which is emerging as a recreational area behind the seventh highest U.S. dam. When the roaring Bighorn River was harnessed, it was merely the latest chapter in a long history. In addition to its Indian segments, the film gives quick glimpses of water sports, wildlife, electric power and farming in this colorful country.

Magnificence In Trust
16mm Film, 28 min, color, 1975
Producer USNPS
Title No. 010104/HH $180.00

Three magnificent parks in Alaska: glaciers crumbling and seals playing among the icebergs of Glacier Bay National Monument; leaping salmon, huge brown bears and smoldering volcanoes of Katmai National Monument; the towering splendor of Mount McKinley, North America's highest peak forming a backdrop for caribou, mountain sheep, moose, and grizzly bears.

Award: CINE Golden Eagle

A Man and a River
16mm Film, 15 min, color, 1973
Producer USEPA
Title No. 000690/HH $87.00

Depicts a river and a man who loves it. The river is the Buffalo, and the man is Thomas Hart Benton, American painter, conservationist, and raconteur.

Man Belongs to the Earth
16mm Film, 22 min, color, 1974
Producer USBIC
Title No. 007286/HH $127.50

Deals with the national environment in our cities, deserts, oceans, and mountains. Presents the problems and some solutions. Shows the destruction threatening the environment and our natural wonders.

Cleared for non-commercial television use.

Mount Desert
16mm Film, 21 min, color, 1969
Producer USNPS
Title No. 010107/HH $135.00

This motion picture, in a documentary manner, brings to the viewer the reactions and feelings of a variety of Mount Desert natives and summer residents in a film montage. Through their involvement in lobstering, sailing, painting and studying the island, a sense of the interinvolvement of man with the environment is conveyed. Acadia National Park is included as an integral part of Mount Desert Island.

Mount McKinley—The Land Eternal
16mm Film, 24 min, color, 1975
Producer USNPS
Title No. 010108/HH $155.00

This film traces the web of life through the seasons and points out the interdependence of all living things in this sub-arctic region of Alaska.

Awards: CINE Golden Eagle Certificate, Trento Festival of Mountain and Exploration Films

Nature's Forge
16mm Film, 29 min, color, 1974
Sponsor USDOE Producer USAEC
Title No. 005899/HH $168.25

Explains how species competed against species for survival during the last ice age in North America 10,000 years ago. Tells how the story is brought up to date with our highly technological society consuming vast amounts of electrical energy, and, as a by-product, producing waste heat, largely released in bodies of water.

New Life for the Great Plains
16mm Film, 12 min, color, 1965
Producer USDA
Title No. 003979/HH $104.25

Promotes the Great Plains Soil Conservation Program by showing the progress made in soil and water conservation in Baca County, Colorado.

New Patterns on the Land
16mm Film, 13 min, color, 1967
Producer USDA
Title No. 003981/HH $116.50

Conservation farming has brought new patterns on the land to the American rural landscape. An explanation was needed for the curiosity of the traveling public who have seen these patterns, particularly from the air. Gives the story of modern farming and ranching in the pictorial setting so few of us really know.

No Turning Back
16mm Film, 28 min, color, 1971
Sponsor USDOE Producer USAEC
Title No. 554800/HH $162.50

Visits some of the men involved in Atomic Energy Commission-supported ecology studies at laboratories and sites across the country. Discusses the research of the forms and variety of life, the interaction of plants and animals, and man's impact on nature and the environment.

The Organism and the Environment
16mm Film, 57 min, B&W, 1961
Producer USDA
Title No. 004575/HH $188.00

Demonstrates recent advances in our understanding of interaction in nature as shown by the distribution of plants, competition between populations of beetles, and the migration of fishes.

The Park
16mm Film, 28 min, color, 1975
Sponsor USDOE Producer USERDA
Title No. 007819/HH $162.50

Examines the character of the nuclear industry and its effect on natural resources and living species around it. In 1972, the Savannah River Plant in South Carolina was designated the first National Environmental Research Park. Its objective is to define and control the impact of industry on nature.

Cleared for TV.

Patterns of the Wild
16mm Film, 26 min, color, 1966
Producer USDA
Title No. 003987/HH $150.75

Through the eyes of a wild fox, you see that the wildlife of a forest does not merely live in a forest, but is a part of its structure. Outstanding wildlife photography leads you from season to season. It shows what proper wildlife management is doing to make the National Forests more livable for animals and birds, and more enjoyable for people.

The Plow that Broke the Plains
16mm Film, 25 min, b/w, 1936
Producer USDA
Title No. 605350/HH $80.00

A Documentary Classic. Depicts the social and economic history of the Great Plains from the settlement of the prairies by cattlemen and farmers, through the World War I boom, to drought and depression. Directed by Pare Lorentz, photographed by Paul Strand, Ralph Steiner, and Leo Hurwitz. Music by Virgil Thompson.

The River
16mm Film, 32 min, B&W, 1939
Producer USDA
Title No. 651100/HH $85.00

A documentary classic. Traces life in the Mississippi River Valley during the last 150 years up to the depression. The consequences of sharecropping, soil exhaustion, unchecked erosion, and floods are shown. Concludes with scenes of regional planning, TVA development, and correlated Federal efforts.

Second World Conference
16mm Film, 28 min, color, 1973
Producer USNPS
Title No. 010119/HH $162.50

A documentary on the Second World Conference on national parks held at Yellowstone National Park and Grand Teton National Park in October 1972. Representatives from over 90 countries are shown in the exciting process of developing an international philosophy on conservation and park management. People from various countries speak on the world environmental crisis.

So Little Time
16mm Film, 28 min, color, 1968
Producer USBSFW
Title No. 003490/HH $162.50

Shows the need for preserving our wildlife by presenting intimate close-ups of birds and mammals in their natural environment. Describes environmental factors contributing to the decline in waterfowl and other birdlife. Shows animals in moments of peril, territorial disputes, at rest, and in flight.

Think Like a Mountain
16mm Film, 28 min, color, 1972
Producer USDA
Title No. 005294/HH $162.50

Discusses rare and endangered species of wildlife and the duty of the Forest Service to protect them. Shows mountain men, cowboys, wolf trappers, and a hermit discussing the changes they have witnessed in the land and its wildlife.

This Land
16mm Film, 17 min, color, 1967
Producer USNPS
Title No. 010126/HH $110.00

This motion picture gives the viewer a poetic sense of relevance to the vast natural treasures that make up this land. Through a study of the many places of immense variety and grandeur of the National Park System and the tracing of the mark of man upon this country, the significance of the National Park Service is made plain. Produced for the National Park Service by Newspix Productions, Washington, DC.

We Can't Let It Go
16mm Film, 19 min, color, 1971
Producer USDA
Title No. 005060/HH $110.25

Documents the first year of the Youth Conservation Corps. Shows boys and girls in many parts of the country working and learning about the complex interrelationships that exist in nature.

What Is A Mountain?
16mm Film, 23 min, color, 1967
Producer USNPS
Title No. 010131/HH $150.00

Set in a mood relevant to the appreciation of the great mountain, this film instills a deeper understanding of the natural beauty and history of Mount Rainier in Mount Rainier National Park, Washington.

Awards: Certificate, San Francisco International Film Festival; Diploma, Kranj International Festival of Sport & Tourist Films

Pesticides

Man Is Responsible To The Earth
16mm Film, 15 min, color, 1975
Producer USEPAP
Title No. 009488/HH $87.00

Explains that pesticides have been an invaluable aid for improving the quantity and quality of crops, but they have been used incorrectly and unnecessarily in some cases. Presents insect scouting as a tool for determining the need for insecticide use. Shows how scouting in the pea growing area provides effective control and savings for the farmer.

Cleared for non-sponsored TV.

The Epidemiology of Pesticide Poisonings
16mm Film, 19 min, color, 1969
Producer USNMAC
Title No. 305454/HH $110.25

Describes pesticides and their use, the prevalence of pesticide poisonings, and the reasons and methods for staging an epidemiological investigation. Portrays two specific cases showing the methods used in the investigation.

Pesticides in the Environment
Slide Set, 80 color slides, 17 min audiocassette, 1975
Producer USOPP
Title No. 008157/HH $26.00

Pictures the hazards to man's environment caused by the misuse of chemical pesticides.

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Solid Waste

The Big Pickup
16mm Film, 28 min, color, 1975
Producer USEPA
Title No. 009780/HH $162.50

A big city mayor once said: "Everybody wants us to pick up their garbage but nobody wants us to put it down." The Big Pickup describes America's five billion dollar-a-year chore . . . collecting solid waste. This documentary film shows the garbage collector's problems and illustrates new techniques which can improve efficiency and effectiveness.

Hazardous Wastes—The Gross National By-Product
Slide Set, 44 color slides, 18 min audiocassette, 1976
Producer USOSWM
Title No. 007918/HH $12.50

Explains what hazardous wastes are and how they are produced. Discusses how they are treated, transported, and disposed of. Summarizes the problem and suggests ways for concerned citizens and public interest groups to take constructive action to cope with hazardous wastes.

Mission 5000
Sound Filmstrip, 127 fr., color, 20 min audiocassette, 1973
Producer USEPA
Title No. 005071/HH $19.50

Describes the projects in which individual citizens and citizen groups join together to eliminate 5,000 of the Nation's open dumps. Shows how closing a dump makes your community a better place, and helps change our 'throwaway' society.

Mount Trashmore
16mm Film, 4 min, color, 1974
Producer USEPA
Title No. 005628/HH $23.25

Discusses the solid waste disposal problem facing many communities. Shows how Virginia Beach, VA solved it by combining its trash with that from neighboring communities, and building a large sanitary landfill on top of the ground. States that when finished, Mt. Trashmore will become a recreation area.

The Phoenix
16mm Film, 22 min, color, 1975
Producer KLWV Sponsor USEPA
Title No. 009234/HH $127.50

Explores the materials use cycle and its role in solid waste. Traces the collection, transportation, and disposal of waste in Kansas, and analyzes current attempts to recover materials and energy from the solid waste stream. Discusses proper waste management practices, focusing on land disposal of municipal wastes and safe disposition of feed-lot wastes which are abundant in a state with large cattle-feeding operations. Suggests what roles the consumer can play in such programs.

Pollution Solution?
16mm Film, 15 min, color, 1977
Producer USNASA
Title No. 008977/HH $87.00
The film discusses how Landsat's remote sensing capabilities can aid in resolving environmental quality problems. The satellite can locate and monitor strip-mining operations to facilitate land reclamation programs. The satellite helps solve some meteorological mysteries by tracking the path of airborne pollution. It can also monitor the course of industrial wastes and garbage dumped into our lakes, rivers and coastal areas.

Portrait of a San-Man
16mm Film, 15 min, B&W, 1975
Producer USEPA
Title No. 009349/HH $49.50
Shows the work done in EPA's Region 2 under an Office of Solid Waste Management Programs grant to the Environmental Action Foundation. Presents information gathered from interviews with the men who collect New York City's tons of garbage every day.

Re-use, Recycle, Renew
16mm Film, 18min, color, 1975
Producer NMLWV Sponsor USEPA
Title No. 009233/HH $104.50
Focuses on solid waste management in New Mexico, concentrating primarily on waste disposal methods. Emphasizes the landfill method because of the large number of disposal sites available. Discusses the potential for resource recovery from municipal as well as animal and mining wastes.

Recycling
16mm Film, 22 min, color, 1971
Producer USEPA
Title No. 002180/HH $127.50
An exposition of emerging techniques on the re-use, recovery, and recycling options presently being demonstrated. It contains nevertheless much useful information of current importance on how materials now ending up as municipal solid waste may be used to extend the supply of our Nation's natural resources.

The Realities of Recycling
16mm Film, 39 min, color, 1971
Producer USEPA
Title No. 002177/HH $226.25
A valuable exposition of various equipment being used to recover usable materials from solid waste. It examines technology still being evaluated to recover glass, aluminum and steel containers, paper, and old car hulks.

The Stuff We Throw Away
16mm Film, 23 min, color, 1970
Producer USOSWM Sponsor USEPAP
Title No. 002201/HH $133.50
Describes the massive problem of collecting and disposing of America's solid wastes. Illustrates a variety of new and improved techniques that are being investigated and demonstrated under provisions of the Solid Waste Disposal Act.

Sanitary Landfill One Part Earth to Four Parts Refuse
16mm Film, 24 min, color, 1969
Producer USEPA
Title No. 002188/HH $139.50
Presents all aspects of landfill planning and operation from site selection, equipment requirements, climate influences, operating procedures, topography, and soil conditions, to final contour planning and ultimate use of the completed fill. While much of the film concerns the deep filling—land-fills of 200 tons-per-day capacity or greater—much of the information given can, with judgment, be applied to smaller facilities.
Designed for technical audiences.

Sound

The Air Installations Compatible Use Zones—The Harmonious Development of Airfield Environments
16mm Film, 17 min, color, 1976
Producer USN
Title No. 008592/HH $98.50
Shows the Navy's efforts required by DOD Inst. 4165.57, Air Installations Compatible Use Zones program. Describes the problems of incompatible land use surrounding Naval Air installations, the effects of aircraft noise on humans, Navy noise pollution abatement stategies, and recommendations for local governments to achieve compatible land use.

Can we Have a Little Quite, Please
16mm Film, 15 min, color, 1971
Producer USFAA
Title No. 002008/HH $87.00
Illustrates how Government and industry are cooperating to reduce aircraft smoke emissions and noise, particularly around airports, and describes technical improvements that have led to jet engine sound abatement procedures. Emphasizes that more enlightened land use planning in airport neighborhoods can make aviation compatible to, and not competitive with, other community interests.

A Demonstration in Urban Noise Control
16mm Film, 3 min, color, 1972
Producer USNBS
Title No. 007832/HH $17.50
Demonstrates five ways to control one typical urban noise problem, the truck. Shows improved mufflers, better tire tread design, artificial noise barriers, natural barriers, and improved building construction.

Have you Heard
16mm Film, 26 min, color, 1974
Producer USN
Title No. 009230/HH $150.75
Shows training in the prevention of hearing loss from hazardous noise exposure.

Meet Mr. Noise
16mm Film, 26 min, color. 1962
Producer USAF
Title No. 002375/HH $150.75
Points out hazards of working in an area of vibration and noise. Shows how noise of heightened intensity can impair hearing and general health. Demonstrates how properly fitted protective devices worn by personnel reduce adverse effects of noise.

Noise Presentation
16mm Film, 12 min, color, 1972
Producer USNBS
Title No. 007075/HH $69.50
Presents various sources of noise pollution which surround us. Shows how the noise levels range from quiet sounds to some which are extremely loud. Made from an audio/slide demonstration prepared by the National Bureau of Standards for the President's Cabinet Committee on the Environment. In the original demonstration, sounds were reproduced at real level using calibrated audio equipment. Because of the limitations of most audio equipment and optical film tracks, sounds will not be experienced as recorded. However, the graph which appears on the lower left portion of the film shows sound levels in decibels as they were originally recorded. In order to achieve maximum effectiveness from this film, it is desirable that an amplification and speaker system which is separate from the film projector be used.

Ocean Phenomenon—The Deep Scattering Layer
16mm Film, 29 min, color, 1970
Producer USN
Title No. 561701/HH $168.25
Describes the search for the cause of sound reflecting layers of marine life living in the oceans of the world and how new information has helped in solving this mystery.

Water

AOSS—Airborne Oil Surveillance System
16mm Film, 21 min, color, 1975
Producer USCG
Title No. 007840/HH $121.75
Depicts the Coast Guard's electronic surveillance system, developed in response to pollution problems for the detection of oil spills. AOSS uses four sensors consisting of: a side-looking radar, low-light-level TV camera, infrared/ultraviolet line scanner, and a passive microwave imager. This film shows the capabilities of detection and surveillance of oil spills in all weather conditions.

The Bitter and the Sweet
16mm Film, 30 min, color, 1971
Producer USAEC
Title No. 007053/HH $174.00
Discusses technical aspects of desalting water, and presents a capsule report on the status of commercial desalting in the western hemisphere. Relates the need to employ energy for desalting as the demand for fresh water grows.

But for How Long
16mm Film, 27 min, color, 1974
Producer USN
Title No. 009651/HH $156.50
Discusses how the Navy combats pollution of the oceans by using its knowledge of undersea currents to predict the direction of effluent flow from sewage outfalls. Also explains the development of new shipboard waste treatment facilities and techniques for control and recovery of oil spills.

Cleanup
16mm Film, 18 min, color, 1975
Producer USN
Title No. 009655/HH $104.50
Shows some basic tools for oil removal in naval harbors. Also shows various types of equipment used to contain and clean up oil spills, including fire hoses, piston film, absorbents, brooms, and skimmers. Discusses the advantages and disadvantages of each representative type of equipment.

Columbia River Environment
16mm Film, 29 min, color, 1970
Producer USAE
Title No. 004747/HH $189.00
Depicts accomplishments of the Corps of Engineers and other Federal agencies. Discusses the development of power resources, navigation, irrigation, flood control, fish and wildlife preservation, and recreation in the Columbia River Basin.

The Day the Tide Turned Red
16mm Film, 27 min, color, 1975
Producer USN
Title No. 009652/HH $156.50
Discusses how Navy scientists are studying and discovering methods of controlling the 'Red Tide' phenomenon to prevent its poisonous effects on men and marine life.

Desalting the Seas
16mm Film, 17 min, color, 1967
Producer USAEC
Title No. 001533/HH $98.50
Describes the various methods of purifying saline water through the use of nuclear energy, with particular emphasis on large-scale, dual-purpose, nuclear-electric desalting plants, which purify water and produce large amounts of electric power simultaneously.

Elevator at the Ocean's Edge
16mm Film, 7 min, color, 1973
Producer USN
Title No. 009102/HH $40.50
Describes how scientists, working in a shirt-sleeve, one-atmosphere capsule beneath the surface of the sea, can conduct environmental studies as well as observe marine life.

Filtration and Testing of Water
3 Sound Filmstrips, color
Producer USPHS Sponsor USNMAC

■ **Filtration Plants**
59 fr. color filmstrip, 8 min audio tape, 1953
Title No. 007424/HH $12.50
Explains the operations of the mixing basin, settling basin, gravity sand filter, and chlorinator, of a water treatment plant. Includes storage of water in a reservoir.

■ **The Membrane Filter**
80 fr. color filmstrip, 12 min. audiotape, 1959
Title No. 007399/HH $12.50
Describes the membrane filter, stressing its advantages and disadvantages compared with other methods of water examination.

■ **Sampling and Testing Drinking Water**
74 fr. color filmstrip, 8 min. audiotape, 1950
Title No. 005340/HH $12.50
Presents instruction to be followed by sanitarians in the sampling of drinking water and in the procedures for identifying coliform organisms in drinking water.

The Great Clean Up
16mm Film, 53 min, color, 1976
Producer USEPA
Title No. 002298/HH $307.50
Serves as an update of efforts taken to reduce the pollution in the Great Lakes. Explains efforts in context of the U.S. Canada agreement of April 1972.
Cleared for TV. Only available in the United States.

Gulf Stream
16mm Film, 28 min, color, 1971
Producer USN
Title No. 005585/HH $162.50
Discusses the Gulf Stream research and investigations conducted by the Navy and Navy-sponsored oceanographers.

Hazards of LNG Spills in Marine Transportation (Revised)
16mm Film, 15 min, color, 1972
Producer USCG
Title No. 005138/HH $87.00
Summarizes the work done for the U.S. Coast Guard by the Bureau of Mines on the hazards of large spills of liquefied natural gas (LNG) in water transportation. Shows experimental releases of the cold LNG on and under water, and discusses methods of estimating pool sizes, vaporization rates, and flammable gas plume travel. Also shows an unexpected flameless explosion which occurred when 70 gallons of LNG were poured onto the surface of a pond.

A Man and a River
16mm Film, 15 min, color, 1973
Producer USEPA
Title No. 000690/HH $87.00
Depicts a river and a man who loves it. The river is the Buffalo, and the man is Thomas Hart Benton, American painter, conservationist, and raconteur.

Nature of Sea Water
16mm Film, 29 min, color, 1967
Producer USN
Title No. 002576/HH $168.25
Describes physical and chemical properties of sea water. Explains how man's understanding of the sea is basic to making use of ocean resources.

New Water for a Thirsty World
16mm Film, 22 min, color, 1965
Producer USOSW
Title No. 002598/HH $127.50
Tells of saline water conversion—its need, its workings, and its future potential.

Pollution Below
16mm Film, 14 min, color, 1975
Producer USNASA
Title No. 009583/HH $81.25
Presents the stories of three people far apart, caught up in dangerous situations caused by unexpected pollution.
From the Rediscovery series.

Pollution Solution?
16mm Film, 15 min, color, 1977
Producer USNASA
Title No. 008977/HH $87.00
The film discusses how Landsat's remote sensing capabilities can aid in resolving environmental quality problems. The satellite can locate and monitor strip-mining operations to facilitate land reclamation programs. The satellite helps solve some meteorological mysteries by tracking the path of airborne pollution. It can also monitor the course of industrial wastes and garbage dumped into our lakes, rivers and coastal areas.

The River
16mm Film, 32 min, b/w, 1939
Producer USDA
Title No. 651100/HH $85.00
A documentary classic. Traces life in the Mississippi River Valley before the depression. The consequences of sharecropping, soil exhaustion, unchecked erosion, and floods are shown. Concludes with scenes of regional planning, TVA Development, and correlated Federal efforts.

Spill Recovery—Navy Techniques for Oil Spill Containment and Removal in Harbors
16mm Film, 25 min, color, 1975
Producer USN
Title No. 008568/HH $145.00
Describes in-port oil spills control, reporting procedures, and cleanup operations.

Stormwater Pollution Control—A New Technology
16mm Film, 29 min, color, 1974
Producer USEPA
Title No. 005630/HH $168.25
Shows new techniques being developed to solve the problem of how to handle overflow of raw sewage into storm sewage systems after heavy rains.

To Stem the Black Tide
16mm Film, 14 min, color, 1976
Producer USCG
Title No. 007914/HH $81.25
Shows the Coast Guard's role in the detection, location, and prevention of oil spills and pollution. Coast Guard marine safety and port safety personnel make periodic inspections of national and international vessels. Features the new technology and manpower employed in containing oil spills or minimizing contamination. Also depicts the newly trained and equipped oil pollution response teams.

Troubled Waters (Revised)
16mm Film, 28 min, color, 1966
Producer USSCPW
Title No. 005802/HH $162.50
Follows the path of the Ohio River in order to document the symptoms and solutions to the national problem of water pollution. Script included.

The Wet Look
16mm Film, 15 min, color, 1976
Producer USGSFC Sponsor USNASA
Title No. 008744/HH $87.00
Explores how Landsat's remote sensing capabilities help resolve water resource problems and provide information to hydrologists about snow fall in the mountains, enabling them to estimate the basic water supply available to western states. Shows how it helps in controlling floods by monitoring flood plains, snow packs, and potentially dangerous man-made lakes. Landsat also makes valuable contributions in flood assessment and pollution control.
From the Environmental Series: Landsat—A Satellite For All Seasons. Cleared for TV.

Geology 8

Aim, Action, Achievement
16mm Film, 15 min, color, 1968
Producer USDA
Title No. 003921/HH $124.75
Forty years ago, a vast earth slide occurred on the Teton National Forest in Wyoming. The 'Gros Ventre' slide, rich in geological interest, has been set aside by the Forest Service for study and enjoyment. In a cooperative venture with the Forest Service, YWCA teenagers came from all over the U.S. to construct a foot trail across the slide.

The 1964 Alaskan Earthquake
16mm Film, 20 min, color, 1966
Producer USGS
Title No. 124600/HH $116.00
Uses animated scenes, documentary footage, and models to show the causes of earthquakes, the locations of principal earthquake zones, and the relationship between geologic environment and earthquake damage.

Avalanche Control
16mm Film, 38 min, color, 1965
Producer USDA
Title No. 003922/HH $220.50
Reports on the program of prediction and control of snow avalanches conducted by the U.S. Forest Service at Alta, UT.

Avalanche Hazards
16mm Film, 20 min, b/w, 1968
Producer USA
Title No. 004743/HH $66.00
Discusses the forces that cause snow avalanches—characteristics of various types—and how to cope with potential hazards.

Dateline Alaska
16mm Film, 12 min, b/w, 1965
Producer USDOD
Title No. 257750/HH $39.50
Reviews the damage resulting from the 1964 Alaskan earthquake and portrays fast restoration to near normal operation. Cites the courage of the Alaskan people and the quick response of Congress, the Armed Forces, the Red Cross, and other agencies as reasons for Alaska's fast recovery.

Deep Sea Drilling Project
16mm Film, 28 min, color, 1970
Producer USNSF
Title No. 262245/HH $162.50
Presents the idea of continental drift and sea floor spreading. Shows activity aboard the drilling ship Glomar Challenger as sedimentary cores from the ocean bottom are brought up through the longest drill string ever suspended from a floating platform. Shows how the studies of the cores have virtually confirmed the theories of drift and spreading.

Earthquake Below
16mm Film, 15 min, color, 1975
Producer USNASA
Title No. 009470/HH $87.00
Centers on San Francisco, the city that lives in constant threat of earthquakes. Shows how earthquakes shattered the San Francisco of 1906 and upset suburban Los Angeles more recently. Explains how earthquakes are caused and pictures the fault systems that are prime targets for them in the future.
From the Rediscovery series.

Earthquake
2 16mm Films, color, 1972
Producer USDCPA
Title No. 003524/HH (Short version, 13 min) $ 75.50
Title No. 002075/HH (Long version, 29 min) $168.25
Tells the story of what happened in southern California when an earthquake struck, and how the people and their government responded.

ERTS—Earth Resources Technology Satellite
16mm Film, 29 min, color, 1973
Producer USNASA
Title No. 002084/HH $168.25
Shows 10 U.S. investigators who explain how they are using ERTS images to identify crops; forests and grass lands; to study urban development; determine the boundary of wetlands; identify geological features that may lead to mineral and fuel deposits; and to monitor disasters such as floods, volcanic eruptions, etc.

Eruption of Kilauea, 1959-60
16mm Film, 29 min, color, 1962
Producer USGS
Title No. 003116/HH (English) $168.25
Title No. 003117/HH (Spanish) $168.25
Features the spectacular eruption of Kilauea Volcano of 1959-60, highlighting the sight and sound of lava fountaining from the subsidiary crater, Kilauea Iki. Produced in cooperation with the rangers and naturalists of the National Park Service at Hawaii National Park.

Fire and Ice
16mm Film, 20 min, color, 1973
Producer USNPS
Title No. 010077/HH $130.00
Formation of Mount Rainier across eons of geological time . . . then gradual erosion of this sleeping volcano as time-lapse movement of a sweeping glacier sculptures and diminishes it.
Awards: CINE Golden Eagle; Trophy of Nations, Trento International Festival of Mountain & Exploration Films; Certificate of Creative Excellence, U.S. Industrial Film Festival.

The Fractured Look
16mm Film, 15 min, color, 1977
Producer USNASA
Title No. 008974/HH $87.00
Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present, or potential earthquake activity. Faults are also the pathways minerals use to make their way from deep within the Earth to its surface. Shows how the Landsat imagery can contribute to exploration for mineral resources by revealing fractures and rock alterations.
From the Environmental Series. Landsat—A Satellite For All Seasons. Cleared for TV.

Geology From Space
Sound Filmstrip, color, 24 min audiotape, 1967
Producer USNASA
Title No. 002096/HH $12.50
Uses photographs of the Earth taken by Gemini astronauts to show various geological features around the world. Emphasizes how space photography can aid future geological study.

Geology of Zuni Salt Lake Maar
16mm Film, 16 min, color, 1969
Producer USGS
Title No. 000084/HH $92.75

Portrays the geologic history of Zuni Salt Lake Maar in New Mexico. Uses aerial photography, maps, and charts. Emphasizes the formation mechanics of the crater in which the lake is located.

Glacier Legacy
16mm Film, 28 min, color, 1971
Producer USNPS
Title No. 010087/HH $180.00

A summary of the geologic effects the glaciers of the ice age had upon the total face of the North American continent. Through location photography, existing glaciers as well as the geologic effects created by glaciers of the ice age are shown to illustrate the role they played in shaping the land.

Hawaiian Volcanoes
16mm Film, 9 min, color, 1975
Producer USNPS
Title No. 010091/HH $60.00

Eruptions of vigorously active Kilauea and Mauna Loa, on the island of Hawaii, are featured. Spectacular scenes include: cascades and fountains; the building of spatter cones; Mauna Loa's famous "curtain of fire"; and a massive flow from Mauna Loa plunging into the sea.

Katmai—Astronaut Field Trip to Mt. Katmai Area, Alaska
16mm Film, 19 min, color, 1969
Producer USGS
Title No. 000085/HH $110.25

Describes the geology of Katmai National Monument in Alaska. Presents a geologic interpretation of the classical ash flow of the Valley of Ten Thousand Smokes. Uses both aerial photography and ground exploration techniques.

The Land Beneath the Sea
16mm Film, 25 min, color, 1968
Producer USN
Title No. 002503/HH $145.00

Demonstrates how marine geologists research the ocean bottom and learn about the ocean environment. Discusses the significance of marine geology and explains why a thorough knowledge of the ocean floor is essential in the use of the oceans for defense and economic purposes.

Lehman Caves Nations' Monument
16mm Film, 12 min, color, 1971
Producer USNPS
Title No. 010102/HH $75.00

Colorful underground photography focuses on the formation of limestone caves, featuring the singular effects on Lehman Caves, to create a better understanding of the beauty and importance of the great caves of America and their geological story.

Mars—Is There Life?
16mm Film, 15 min, color, 1976
Producer USNASA
Title No. 008117/HH $87.00

Discusses the possible past history of Mars and its present surface topography—volcanoes, ice caps, stream beds, impact craters, canyons, and wind-eroded surfaces. Also discusses the Viking Lander and its biology experiments in relationship to the search for life on Mars. Encourages students to discuss life forms that might be able to survive on Mars and the potential significance of their discovery.

Modern Geodetic Surveying
16mm Film, 18 min, color, 1967
Producer USN
Title No. 002546/HH $104.50

Shows the need, nature, and means of geodetic surveying as it exists today, with emphasis on the challenge of the future.

Cleared for TV.

Nineteen Hundred Fifty-Five Eruption of Kilauea Volcano, Hawaii
16mm Film, 12 min, color, 1958
Producer USGS
Title No. 003115/HH $69.50

Features the eruption of Kilauea Volcano, Hawaii in 1955 from the first appearance of fissures that formed along the rift zone, through the appearance of lava, to great pillars of rising steam generated as the lava river plunges into the sea.

Reading the Moon's Secrets
16mm Film, 16 min, color, 1977
Producer USNASA
Title No. 008978/HH $92.75

Discusses important aspects of lunar knowledge, using Apollo gained data.

Cleared for TV.

Science in the Seventies
16mm Film, 52 min, color, 1974
Producer USNSF
Title No. 008747/HH $301.50

Summarizes the goal, orientation, and activities of the research and development community. Deals with four subject areas: man and society; the world and its resources; industry and technology; and the relevance of sciences to contemporary problems. Contains animated sequences.

Cleared for TV.

Stone Forest
16mm Film, 17 min, color, 1974
Producer USNPS
Title No. 010123/HH $110.00

Changing moods of the desert and the story of petrification . . . with time-lapse photography detailing the formation of crystals and the process by which fallen trees turn to stone.

Awards: CINE Golden Eagle; 1st Prize, Salerno International Festival; Gold Camera Award U.S. International Film Festival.

Though the Earth be Moved—The Alaskan Earthquake
16mm Film, 45 min, b/w, 1965
Producer USOCD Sponsor USCDPA
Title No. 003671/HH $148.50

Shows the Good Friday Earthquake of 1964 that struck Alaska with a force equal to 10 million atomic bombs of the size that leveled Hiroshima.

Cleared for TV.

Yellowstone—The Living Sculpture
16mm Film, 9 min, color, 1972
Producer USNPS
Title No. 010135/HH $60.00

Live photography, three-dimensional animation, and splitscreen techniques are effectively used to describe the natural processes by which the major features, such as geysers, are cycled in thermal areas. A clear demonstration of what happens as ground water seeps through sub-surface ducts to trigger such spectacular results as bubbling mud pots, hot springs, and geysers.

Mathematics and Computer Science 9

Introduction to Automatic Data Processing
16mm Film, 31 min, b/w, 1958
Producer USA
Title No. 433235/HH $102.25

Discusses the automatic data processing system (ADPS), explaining its underlying concept, capabilities, operation, and application as a new management tool. Shows several systems currently in use in government installations—electric accounting machines, Remington Rand Univac system, RAC Bizmac system, Underwood Elecom, Burroughs Dataron system. Using animation analyzes the features, operation, and functional components of ADPSs, giving attention to communication networks, input and output devices, and the control section memory section, and arithmetic and logic section. A simple problem is processed for demonstration purposes.

This has been declared obsolete for use within the sponsoring agency, but may have other content value for educational use.

Introduction to Analog Computers
16mm Film, 120 min, color, 1963
Producer USAEC
Title No. 002434/HH $696.00

Discusses the programming techniques and components of an electronic analog computer. Presents solutions to typical computer problems.

Access
16mm Film, 22 min, color, 1975
Producer USTID Sponsor USNASA
Title No. 007715/HH $127.50

Gives a general overview of NASA's scientific and technical information program. Shows the various announcement media and the on-line, interactive search and retrieval system which provides a user direct access to the entire information store of over 1.2 million citations. Describes other products and services that also will assist a scientist or engineer in solving information problems.

Business Machine Operators
16mm Film, 7 min, color, 1967
Producer USDLMP
Title No. 192815/HH $40.50
Presents on-the-scene information on the nature and variety of job opportunities in the field of business data processing. Stresses the age range and mobility potential of people with business machine skills.
Cleared for TV.

Computer Assisted Instruction
16mm Film, 21 min, color, 1974
Producer USDSA
Title No. 005884/HH $182.25
Describes the computer assisted instruction system installed and tested at the U.S. Army Signal School, Fort Monmouth, NJ. Shows the process by which lesson materials are prepared for the computer and how students use the computer terminal as part of their curriculum.

Computer Color Generations
16mm Film, 23 min, color, 1972
Sponsor USDOE Producer USAEC
Title No. 002055/HH $150.00
Discusses a technique developed at the Los Alamos Scientific Laboratory that produces color film from the computer without any increase in computer time over an equivalent black and white run. Because more information is possible per frame, the overall expense will drop significantly. Various areas of LASL research, which use computer color film output are discussed and results illustrated.

Computer Fluid Dynamics
16mm Film, 24 min, color, 1969
Producer USAEC
Title No. 237348/HH $156.50
Demonstrates use of giant electric computers for solving fluid problems previously impractical to undertake.

Connecting Link
16mm Film, 9 min, color, 1975
Producer USDA
Title No. 007997/HH $52.25
Explains how the Beef Carcass Data Service helps cattle producers and feeders obtain information on the quality yield characteristics that determine the value of the carcass.

The Controller-Computer Partnership
16mm Film, 8 min, color, 1969
Producer USFAA
Title No. 242780/HH $46.50
Shows how American computer technology is applied to the heart of the aviation system, permitting controllers to spend their time making vital flight decisions. Explains the emergence of a semi-automated air traffic control environment in which routine clerical chores are done by computer.

Diffractometer Control System—A System for Easy Man-Machine Communications
16mm Film, 15 min, color, 1970
Producer USNBS
Title No. 272400/HH $87.00
Technically explains the use of a diffractometer control system at the National Bureau of Standards' reactor. Explains the technique of using a digital computer to perform the tedious, repetitive operations required in collecting data for crystal structure analysis, while the human experimenter performs the supervisory functions for which man is uniquely qualified. (Film assumes basic knowledge of structural crystallography.)

Digital Computer Techniques
4 16mm Films, color, 1962
Producer USN

■ **Digital Computer Technique—Introduction**
16mm film, 16 min, color
Title No. 272755/HH $92.75
Provides a general introduction to digital computers. Explains the historical origins of calculating devices, points out the differences between analog and digital computers, and discusses the principle steps involved in the solution of problems subjected to the digital computing process.

■ **Digital Computer Technique—Computer Units**
16mm film, 24 min, color
Title No. 272778/HH $139.25
Discusses, in an introductory way, the major units of a digital computer—input, output, arithmetic, and control.

■ **Digital Computer Technique—Programming**
16mm film, 14 min, color
Title No. 272780/HH $81.25
Defines computer programming, explains what is meant by analyzing the problem, shows how a simple flow chart is prepared with symbols giving their meaning, and shows, by use of a simple example, how instructions to the computer are encoded in computer language.

■ **Digital Computer Technique—Computer Logic**
16mm film, 14 min, color
Title No. 272776/HH $75.50
Explains, by means of animation, the binary number system. Defines the several meanings of logic as applied to computers, shows the difference between the decimal and binary number systems, explains how binary numbers are constructed and how arithmetical operations are performed with them. Cites examples of code variations of the binary system.

Eighth Grade Mathematics
16mm Film, 10 min, b/w, 1968
Producer USOE
Title No. 290815/HH $33.00
Designed to stimulate teacher discussion of the various uses of programmed instruction in teaching eighth grade mathematics.

The Fact Finders
16mm Film, 31 min, color, 1967
Producer USDA
Title No. 315770/HH $291.50
Tells how farm statistics are gathered and used by voluntary reporting farmers. Shows national crop and livestock reports being prepared and released.

How to Succeed Without Re-Inventing the Wheel—Engineers Can Retrieve Information
16mm Film, 30 min, b/w, 1965
Producer USDOD Sponsor USAF
Title No. 009529/HH $99.00
Dramatizes the need for engineers to have access to data. Cites the use of a computer as the core of a workable information retrieval system.
Cleared for TV.

Link
16mm Film, 8 min, color, 1967
Producer USAEC
Title No. 005289/HH $46.50
Explains that current experiments in high energy physics involve the analysis of immense quantities of data. Describes the experimental computer approach used in these experiments. Discusses the LINK program and demonstrates the use of a CDC 3600 computer to generate orchestral sounds as background music.

Metric America—A Decision Whose Time Has Come
16mm Film, 34 min, color, 1971
Producer USNBS
Title No. 005606/HH $197.25
Presents a summary of the U.S. Metric Study, presented to the House of Representatives Committee on Science and Astronautics and the National Bureau of Standards. Illustrates some of the main points of the metric system.

What About Metric
Slide Set, 70 color slides, 7 min audiocassette, 1974
Producer USNBS
Title No. 009331/HH $15.75
Discusses the status of the metric system in the U.S. Provides some guidelines on metric conversion for business and industry. Describes the conversion program of Beloit Tool Company.

Modeling Photochemical Air Pollution by Computer
16mm Film, 23 min, color, 1974
Producer USNERC
Title No. 009006/HH $133.50
Describes simulating the photochemical system. Demonstrates the computer output for the particle-in-cell model. Provides an overview of modeling for air pollution scientists and managers.

Modern Geodetic Surveying
16mm Film, 18 min, color, 1967
Producer USN
Title No. 002546/HH $104.50
Shows the need, nature, and means of geodetic surveying as it exists today, with emphasis on the challenge of the future.
Cleared for TV.

Powers of Ten
2 16mm Kinescope Films, b/w
Producer USAF

■ **Powers of Ten—Decimal Conversion and Multiplication**
16mm film, 20 min, b/w
Title No. 003073/HH $66.00
Develops the need for powers of ten, shows the procedures for converting large and small numbers to powers of ten, and explains the rules for multiplying powers of ten.

■ **Powers of Ten—Division and Prefixes**
16mm film, 25 min, b/w
Title No. 003075/HH $82.50
States the rule of division, and solves the example problems. Introduces prefixes and shows how to convert from prefix to power of ten, then from power of ten to standard prefix.

Project on Interpreting Mathematics Education—A Series
5 16mm Films, color, 1970
Producer PSUCCR Sponsor USOE
Title No. 007156/HH $527.75
Ranges across content area. Shows teachers and pupils in action, developing effective ways of increasing mathematical skills.

■ **Using a Mathematics Laboratory Approach**
16mm film, 15 min, color
Title No. 777121/HH $87.00
Acquaints teachers with the laboratory approach by describing what math. labs. are, why they are used, how they are organized, and the kinds of activities which are valuable in the mathematics laboratory. Shows illustrative activities at several grade levels.

■ **Using Diagnosis in a Mathematics Classroom**
16mm film, 15 min, color
Title No. 777502/HH $87.00
Points out that mathematics instruction can be improved by effectively diagnosing pupil needs. Shows the use of interview inventories and diagnostic instruments. Explores ways of grouping pupils on the basis of such evaluations and of providing instruction to meet specific needs.

■ **Practicing Mathematical Skills**
16mm film, 18 min, color
Title No. 613430/HH $104.50
Illustrates suitable materials for practicing mathematical skills. Describes use of a computer terminal. Deals with techniques for promoting interest and ways of identifying appropriate items for drill.

■ **Solving Verbal Problems in Mathematics**
16mm film, 21 min, color
Title No. 697143/HH $121.75
Shows effective ways to promote verbal problem solving skills using examples of actual work which results from the use of multiple approaches. Ranges across content areas, without stressing any particular content.

■ **Operations with Whole Numbers**
16mm film, 22 min, color
Title No. 569306/HH $127.50
Explores procedures for interrelating addition and substraction, showing materials, methods, and strategies. Focuses on the use of multiple techniques for improving instruction in multiplication and emphasizes algorithms which have been found to be particularly effective.

Simple Equations
2 16mm Kinescope Films, b/w
Producer USAF

■ **Simple Equations**
16mm film, 40 min, b/w
Title No. 003474/HH $132.00
Explains axioms and algebraic rules needed to solve simple linear equations.

■ **Simple Equations—Fractions**
16mm film, 20 min, b/w
Title No. 003475/HH $66.00
Applies axioms and algebraic rules to the rearrangement of several electronic formulas.

The Slide Rule
2 16mm Films, b/w, 1944
Producer USOE

■ **The Slide Rule—C and D Scales**
16mm film, 24 min, b/w
Title No. 691600/HH $79.25
Explains the C and D scales and markings on the slide rule. Shows how to use these scales for multiplication, division, and combined operations.

■ **The Slide Rule—Proportions, Percentages, Squares, and Square Roots**
16mm film, 21 min, b/w
Title No. 691150/HH $69.25
Demonstrates how to use the slide rule to calculate squares, square roots, proportions, and percentages.

Space Navigation
16mm Film, 21 min, color, 1967
Producer USNASA
Title No. 702576/HH $121.75
Explains the principles of charting a course in space for manned and unmanned spacecraft. Discusses navigating between Earth and other celestial bodies, with concentration on navigation methods in the Apollo program.

U.S. Naval Observatory
16mm Film, 18 min, color, 1970
Producer USN
Title No. 767781/HH $104.50
Shows how astronomers and mathematicians determine time—predict and publish the positions of the Sun, Moon, stars, and planets for navigation and scientific purposes—and do fundamental astronomical research.

Vectors
16mm Film, 12 min, b/w, 1945
Producer USN
Title No. 780900/HH $39.50
Explains vectors, changes in angle or magnitude, how vectors are plotted, and how the resultant is found.

Oceanography 10

Assault on the Unknown—Oceanographic Research Platform
16mm Film, 29 min, color, 1972
Producer USN
Title No. 005159/HH $168.25
Shows the sophisticated research platform. Provides essential information for a better understanding of the oceans.

Bathymetry—Discovering the Ocean Floor, Charting the Ocean Bottom
16mm Film, 16 min, color, 1970
Producer USN
Title No. 163804/HH $92.75
Shows the procedures for taking and submitting bathymetric reports and reasons for increasing the quality of these reports.

But for How Long
16mm Film, 27 min, color, 1974
Producer USN
Title No. 009651/HH $156.50
Discusses how the Navy combats pollution of the oceans by using its knowledge of undersea currents to predict the direction of effluent flow from sewage outfalls. Also explains the development of new shipboard waste treatment facilities and techniques for control and recovery of oil spills.

California Gray Whale
16mm Film, 22 min, color, 1975
Producer USNPS
Title No. 010062/HH $140.00
The biology and history of one of nature's largest creatures and greatest spectacles are featured in this unusual film including documentation of the longest known migration of any mammal.

Charting the Oceans
16mm Film, 28 min, color, 1972
Producer USN
Title No. 005167/HH $162.50
Shows the history of charts. Shows how the Navy makes them and the importance of charts to mariners.

The Day the Tide Turned Red
16mm Film, 27 min, color, 1975
Producer USN
Title No. 009652/HH $156.50
Discusses how Navy scientists are studying and discovering methods of controlling the Red Tide phenomenon to prevent its poisonous effects on men and marine life.

Decade of Discovery in the Depths
16mm Film, 22 min, color, 1968
Producer USN
Title No. 005567/HH $127.50
Shows results of the ten-year period of underwater research performed by scientists at the Naval Underwater Research Laboratory.

Deep Sea Drilling Project
16mm Film, 28 min, color, 1970
Producer USNSF
Title No. 262245/HH $162.50
Presents the idea of continental drift and sea floor spreading. Shows activity aboard the drilling ship Glomar Challenger as sedimentary cores from the ocean bottom are brought up through the longest drill string ever suspended from a floating platform. Shows how the studies of the cores have virtually confirmed the theories of drift and spreading.

Videocassette and Super 8mm
Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Diving for Science
16mm Film, 28 min, color, 1973
Producer USN
Title No. 008108/HH $162.50
Shows the techniques of shallow water diving, and how they are used by scientists and engineers. Examines the development of diving capabilities by research in the Navy's new hyperbaric chamber.

Edge of Discovery
16mm Film, 28 min, color, 1975
Producer USN
Title No. 008108/HH $162.50
Shows the effects of sea water barnacles and fouling animals on metals and other materials. Discusses new methods for preventing marine fouling which are being researched by the Navy.

Elevator at the Ocean's Edge
16mm Film, 7 min, color, 1973
Producer USN
Title No. 009102/HH $40.50
Describes how scientists, working in a shirt-sleeve, one-atmosphere capsule beneath the surface of the sea, can conduct environmental studies as well as observe marine life.

Gulf Stream
16mm Film, 28 min, color, 1971
Producer USN
Title No. 005585/HH $162.50
Discusses the Gulf Stream research and investigations conducted by the Navy and Navy-sponsored oceanographers.

Key to Innerspace
16mm Film, 19 min, color, 1975
Producer USN
Title No. 009654/HH $145.00
Presents a special report on contributions of Skylab 4 to oceanography.

The Land Beneath the Sea
16mm Film, 25 min, color, 1968
Producer USN
Title No. 002503/HH $145.00
Demonstrates how marine geologists research the ocean bottom and learn about the ocean environment. Discusses the significance of marine geology and explains why a thorough knowledge of the ocean floor is essential in the use of the oceans for defense and economic purposes.

Makai—The Documentary of an Open Ocean Dive
16mm Film, 28 min, color, 1973
Producer USN
Title No. 005205/HH $162.50
Shows the preparation and employment of a mobile saturation dive off the coast of Oahu, Hawaii. Combines spectacular underwater photography with descriptions of diving research sponsored by the Bureau of Medicine and Surgery, the Office of Naval Research, and the Navy Supervisor of Diving.

Mission Oceanography
16mm Film, 29 min, color, 1966
Producer USN
Title No. 525901/HH $168.25
Presents a history of the origins and developments of oceanography from early whaling days. Describes the Navy's first scientific exploration of world oceans.

Nature of Sea Water
16mm Film, 29 min, color, 1967
Producer USN
Title No. 002576/HH $168.25
Describes the physical and chemical properties of sea water. Explains how man's understanding of the sea is basic to making use of ocean resources.

Ocean Desert
16mm Film, 29 min, color, 1971
Producer USN
Title No. 005616/HH $168.25
Documents the oceanographic investigation of the Sargasso Sea by Navy scientists and private oceanographic institutions.

Ocean Instruments for Deep Submergence Vehicles
16mm Film, 29 min, color, 1969
Producer USN
Title No. 005217/HH $168.25
Shows the special instrumentation requirements for deep submergence vehicles. Describes developments in this field.

Ocean Phenomenon—The Deep Scattering Layer
16mm Film, 29 min, color, 1970
Producer USN
Title No. 561701/HH $168.25
Describes the search for the cause of sound reflecting layers of marine life living in the oceans of the world and how new information has helped in solving this mystery.

Oceanographic Research with the Cousteau Diving Saucer
16mm Film, 27 min, color, 1966
Producer USN
Title No. 561860/HH $156.50
Describes how Naval Electronics Laboratory scientists made use of the Sous-Coupe and Sous-Marine over a period of six months.

Oceanography in the Polar Regions
16mm Film, 29 min, color, 1969
Producer USN
Title No. 005218/HH $168.25
Discusses oceanographic research in the Arctic and the Antarctic. Shows how men master the oceans for defense and for the economic betterment of the world.

Operations in Sea Ice—Identification of Sea Ice
16mm Film, 13 min, color, 1953
Producer USN
Title No. 003408/HH $112.75
Describes terminology used in classifying Arctic sea ice, types of ice, the life cycle of sea ice, and the formation of icebergs.

Plankton—Life of the Sea
16mm Film, 25 min, color, 1972
Producer USN
Title No. 005227/HH $145.00
Shows how the study of plankton is making major contributions toward an understanding of the ocean environment.

Thirty Days Beneath the Sea
16mm Film, 15 min, color, 1971
Producer USN
Title No. 002207/HH $87.00
Shows the drifting voyage of the Ben Franklin submersible under the Gulf Stream and how new knowledge is derived from the cruise to the addition of the understanding of the oceans.

Voyage of the Elisha Kane
16mm Film, 15 min, color, 1969
Producer USN
Title No. 005267/HH $87.00
Shows oceanographic ships of the Navy making scientific investigations and new discoveries about the ocean.

World of the Sea
16mm Film, 27 min, color, 1973
Producer USN
Title No. 005400/HH $156.50
Shows the development of new diving techniques and systems which will enable divers to live and work in the sea for extended periods of time.

Physics 11

Aeroelastic Phenomena and Related Research
16mm Film, 14 min, color, 1973
Producer USNASA
Title No. 003112/HH $81.25
Shows aeroelastic phenomena that result from the interaction between aerodynamic loads and the deforming surfaces in aerospace vehicles. Demonstrates some techniques employed in aeroelastic experiments.
Recommended for professional groups only.

Automobile Tire Hydroplaning—What Happens
16mm Film, 12 min, color, 1967
Producer USNASA
Title No. 155899/HH $69.50
Shows how and why automobile tires lose contact with wet pavements and the relationship between speed, tire wear, and water depth. The dangers of hydroplaning are emphasized. Produced jointly with the Bureau of Public Roads.

Caution—Wake Turbulence
16mm Film, 15 min, color, 1973
Producer USFAA
Title No. 789611/HH $87.00
Illustrates the phenomenon of wing tip vortices, how they are generated, what generates them, their effects on light aircraft, and suggests pilot actions on how best to avoid them.

Computer Fluid Dynamics
16mm Film, 24 min, color, 1969
Producer USAEC
Title No. 237348/HH $156.50
Demonstrates use of giant electric computers for solving fluid flow problems previously impractical to undertake.

Don't Build that Rocket Alone
Sound Filmstrip, 64 fr, color, audiotape, 1965
Producer USNASA
Title No. 005288/HH $12.50
Emphasizes the importance of safety precautions and adult supervision in building and launching model rockets. Illustrates the dangers of improper handling of such rockets.

Doppler Principles
16mm Kinescope Film, 30 min, B&W
Producer USAF
Title No. 278060/HH $99.00
Explains the Doppler effect on a transmitted wave when it encounters a moving object or when the transmitter itself is moving. Explains the Doppler effect when the target is moving at various angles to the transmitter.

Elementary Hydraulics—A Series
4 16mm Films, B&W, 1947
Producer USN
Series No. 007128/HH $204.75

■ **Application of Pascal's Law, Part 1**
16mm film, 13 min, b/w
Title No. 141600/HH $43.00
Reviews Pascal's law and demonstrates its application in the operation of a hydraulic system.

■ **Application of Pascal's Law, Part 2**
16mm film, 15 min, b/w
Title No. 141601/HH $49.50
Demonstrates Pascal's law, using two output pistons. Explains the principles of hydraulic brakes and the hydraulic jack.

■ **Derivation of Pascal's Law, Part 1**
16mm film, 16 min, b/w
Title No. 265650/HH $52.75
Stresses the importance of hydraulic power aboard ship. Demonstrates that oil is lighter than water. Explains density, pressure, and force and shows how to determine each in a given amount of fluid.

■ **Derivation of Pascal's Law, Part 2**
16mm film, 18 min, b/w
Title No. 265651/HH $59.50
Demonstrates that liquids transfer force equally to all parts of a container. Explains the operation of several types of pressure gauges. Reviews Pascal's law.

Fire Prevention—The Nature of Fire
16mm Film, 16 min, color, 1958
Producer USN
Title No. 326725/HH $92.75
Uses animation to show that a fire has three essential elements—oxygen, temperature and fuel—and that a fire can be controlled by the elimination of any one of these elements.

Foilborne
16mm Film, 15 min, color, 1972
Producer USN
Title No. 005185/HH $87.00
Shows how hydrofoils work and what the future holds for them in tomorrow's Navy.

Frequency Spectrum
16mm Film, 16 min, b/w
Producer USAF
Title No. 345704 $52.75
Shows the light spectrum through a prism to explain 'frequency spectrum.' Discusses frequency, wavelength, and period as an introduction to representing the 'frequency spectrum.' Gives the band of frequencies from audio, through radio (including VHF and UHF), to microwave.

Great is the House of the Sun
16mm Film, 21 min, color, 1968
Producer USNASA
Title No. 001733/HH $121.75
Shows the study effects of the airglow phenomena and solar radiation in space, while other scientists prepare experiments to be flown aboard space satellites to study ultra-violet radiation.

Holography—Window to the Future
16mm Film, 27 min, color, 1971
Producer USVA
Title No. 000743/HH $156.50
The principles and description of holography. Shows how a hologram is made and how it may be used in medicine.

How Airplanes Fly
16mm Film, 18 min, color, 1969
Producer USFAA
Title No. 400500/HH $104.50
Shows what makes an airplane get off the ground and stay aloft. Combines animation and live sequences to explain basic aerodynamics for general aviation pilots and high school science students. Describes forces of lift, weight, thrust, and drag in relation to flight.

Laser Safety
16mm Film, 11 min, color, 1973
Producer USNASA
Title No. 004650/HH $63.75
Describes hazards involved in the use of lasers. Shows how an eye injury can result either from direct or reflected exposure to laser beams and how fires result from flammable materials being pierced by laser beams. Explains safety precautions to be exercised by technicians using lasers.

Purchasers and borrowers must first request written permission from the Office of Occupational Medicine and Environmental Health, NASA, Washington, DC 20546. After permission has been obtained, the purchaser or borrower should send the order to National Audiovisual Center with the statement of approval attached.

Link
16mm Film, 8 min, color, 1967
Producer USAEC
Title No. 005289/HH $46.50
Explains that current experiments in high energy physics involve the analysis of immense quantities of data. Describes the experimental computer approach used in these experiments. Discusses the LINK program and demonstrates the use of a CDC-3600 computer to generate orchestral sounds as background music.

Magnetism
Producer USAF
2 Kinescope Films, b/w

■ **Part A**
16mm film, 34 min
Title No. 002322/HH $112.25

Defines magnets and explains the difference between natural and artificial magnets. Discusses the characteristics of magnetic lines of force about a magnet and the laws of repulsion and attraction between magnets. Gives the factors that affect the amount of repulsion and attraction. Explains the theory of molecular arrangement in a magnet.

■ **Part B**
16mm film, 34 min
Title No. 001030/HH $112.25

Discusses magnetic terms—permeability, retentivity, flux, reluctance, residual magnetism, and magnetic shielding. Explains the characteristics of temporary and permanent magnets, concluding with a presentation of the basic shapes in which magnets are generally found.

The New Numbers
16mm Film, 17 min, color, 1968
Producer USDA
Title No. 003980/HH $98.50

Describes the techniques and procedures used by USDA's Statistical Reporting Service in making enumerative and objective surveys of crop yields. Emphasis is given to the procedures used in the field for counting, measuring, and weighing plant characteristics associated with yield per acre of cotton, corn, wheat, and tree fruits.

Ocean Phenomenon—The Deep Scattering Layer
16mm Film, 29 min, color, 1970
Producer USN
Title No. 561701/HH $168.25

Describes the search for the cause of sound reflecting layers of marine life living in the oceans of the world and how new information has helped in solving this mystery.

Refrigeration—Principles of Mechanical Refrigeration
16mm Film, 12 min, color, 1965
Producer USAF
Title No. 003253/HH $69.50

Shows the application of basic physics of heat transfer in refrigeration units. Explains how temperature changes in refrigerant, passes through the expansion valve, compressor, condensor, and evaporator as it carries heat to the outside air.

Cleared for TV. Sold or rented in Continental US only.

The Saturn Propulsion System
16mm Film, 15 min, color, 1962
Producer USNASA
Title No. 664280/HH $87.00

Explains the theory of reaction engines and shows the application of this theory to the Saturn propulsion system.

Skylab Science Demonstrations—A Series
6 16mm Films, color, 1975
Producer USNASA
Series No. 010017/HH $557.00

A six-film series depicting science demonstrations performed under zero-gravity conditions (weightlessness) on the Skylab 3 and 4 missions. Narrated by Dr. Owen K. Garriott, NASA astronaut.

■ **Zero-G**
16mm film, 15 min, color
Title No. 009953/HH $87.00

A fascinating introduction to weightlessness aboard space station Skylab. In this high orbiting laboratory, men float gracefully and freely in three dimensions, performing experiments which can only be done in zero-gravity.

■ **Conservation Laws in Zero-G**
16mm film, 18 min, color
Title No. 009614/HH $104.50

In weightlessness, a tumbling, twisting human can perform many startling demonstrations of angular momentum conservation. The film explores peculiar phenomena by interweaving Skylab demonstrations with earthbound photography. Examples of simultaneous conservation of angular momentum and energy for non-rigid spinning bodies are discussed.

■ **Gyroscopes in Space**
16mm film, 15 min, color
Title No. 009958/HH $87.00

The motion of gyroscopes is not only interesting to students, but also essential to space flight. Both aspects are explored by the film, which focuses on gyroscopic demonstrations and applications on Skylab. A perfectly free spinning gyro is observed for the first time.

■ **Fluids in Weightlessness**
16mm film, 15 min, color
Title No. 009957/HH $87.00

The behavior of ordinary fluids in a weightless condition is astonishing. This film explores numerous fluid phenomena in orbit: behavior both mysterious in appearance and yet relevant to diverse fields of science and technology.

■ **Magnetism in Space**
16mm film, 19 min, color
Title No. 009955/HH $110.25

The Earth's magnetic field extends far out into space. Its presence can be clearly demonstrated by releasing small magnets inside an orbiting spacecraft. The film reviews familiar aspects of magnetism and explores the behavior of magnets in weightlessness.

■ **Magnetic Effects in Space**
16mm film, 14 min, color
Title No. 009954/HH $81.25

Dr. Garriott utilizes a classroom format to teach magnetism and the behavior of magnets in the Skylab orbiting spacecraft.

Solid State Principles
16mm Kinescope Film, 26 min, b/w, 1969
Producer USAF
Title No. 696340/HH $85.75

Identifies the relative energy level of electrons, and chemically active and chemically stable atoms. Defines electron pair bond, covalent bond, and lattice structure. Differentiates between conductor, semiconductor, and insulator. Describes the effect of donor and acceptor atoms on chemically stable lattice structures. Defines and identifies 'P' and 'N' type materials.

Supersonic Laboratory
16mm Film, 16 min, color, 1971
Producer USN
Title No. 005257/HH $92.75

Discusses past and present facilities of the supersonic test tract at the Naval Weapons Center.

Talking with Dolphins
16mm Film, 16 min, color, 1970
Producer USN
Title No. 732620/HH $92.75

Describes studies and experiments made by Naval Electronics Laboratory scientists in the area of underwater sound, using dolphins.

Vectors
16mm Film, 12 min, b/w, 1945
Producer USN
Title No. 780900/HH $39.50

Explains vectors, changes in angle or magnitude, how vectors are plotted, and how the resultant is found.

X-Ray Spectroscopy—The Inside Story
16mm Film, 26 min, color, 1968
Producer USNASA
Title No. 824470/HH $150.75

Dr. Robert J. Liefeld, Professor of Physics, New Mexico State University, explains how X-rays are generated and how an X-ray spectrometer disperses them into a spectrum. He shows how specially grown crystals are made and used in a two-crystal vacuum X-ray spectrometer to diffuse an X-ray beam, isolate a single wavelength, scan a spectrum and record its characteristics.

Weather/ Meteorology 12

Aerology—Observations, Maps, and Forecasts
16mm Film, 15 min, b/w, 1949
Producer USN
Title No. 005056/HH $49.50

Shows how to analyze a weather map and prepare a forecast.

Videocassette and Super 8mm

Many of the 16mm motion pictures listed in this catalog are also available for purchase in various 8mm formats and in videocassette. Please contact the Center's Order Section for further information and prices.

Agnes Was No Lady
16mm Film, 20 min, color, 1973
Producer USDOD
Title No. 004742/HH $116.00

Depicts the tremendous destruction wrought by Hurricane Agnes and the millions of dollars in property damage in a five-state area. Shows how Pittsburgh was protected by flood-control structures built by the Corps of Engineers. Closes with some of the lessons learned from the storm.

Air Force Global Weather Central
16mm Film, 14 min, color, 1971
Producer USAF
Title No. 009533/HH $81.25

Explains the capabilities of the Air Force Global Weather Central, Offutt Air Force Base, NE, and its worldwide application. Shows how a mix of men and machines forecasts weather accurately and quickly.

Air Masses and Fronts
5 16mm Films, color, 1962
Producer USAF

■ **Air Masses and Fronts—Air Masses**
16mm film, 12 min, color
Title No. 000303/HH $69.50

Outlines the fundamentals of air masses. Covers general characteristics and causes of stable and unstable air. Discusses cumulus and stratus cloud layers; turbulence; various directions of air mass movements; effects of heat, cold, altitude; and moist air.

■ **Air Masses and Fronts—Fronts and the Surface Weather Map**
16mm film, 10 min, color
Title No. 000304/HH $58.00

Explains the use of surface weather maps and shows how fronts form from warm and cold air. Shows how weather patterns appear on the map and discusses general wind directions, wind shifts, low pressure troughs, frontal surfaces, and temperature changes. Also covers prognostic charts.

■ **Air Masses and Fronts—The Cold Front**
16mm film, 9 min, color
Title No. 000305/HH $52.25

Outlines principles of the occluded front. Shows how it forms, and discusses its associated weather. Points out the effects of warm and cold air mixtures in summer and winter.

■ **Air Masses and Fronts—The Warm Front**
16mm film, 11 min, color
Title No. 000307/HH $63.75

Discusses the hazards of the warm front and shows how it forms. Covers nimbostratus and alto-status cold decks; summer and winter patterns; areas of instability and structural ice.

Atmospheric Stability and Instability
4 16mm Films, color, 1953
Producer USN

■ **Atmospheric Stability and Instability—Stability and the Weather**
16mm film, 8 min, color
Title No. 001973/HH $46.50

Explains the existing lapse rate on the radiosonde observation chart and the relationship to stability and instability in the atmosphere. Shows the difference between the adiabatic lapse rate of moist and dry air.

■ **Atmospheric Stability and Instability—Adiabatic Process**
16mm film, 14 min, color
Title No. 150850/HH $121.50

Explains the adiabatic process by showing what happens when a parcel of dry or moist air is raised or lowered by convention; the relationship of temperature and saturation at different altitudes; and the plotting of temperature and moisture content on the adiabatic chart. Gives a detailed description of orographic lifting.

■ **Atmospheric Stability and Instability—Existing Temperature Distribution**
16mm film, 14 min, color
Title No. 150851/HH $121.50

Explains the relationship between temperature distribution and stable and unstable air and how this relationship controls the weather. Shows the characteristics of stable and unstable air and how radiosonde signals are plotted.

■ **Atmospheric Stability and Instability—Thermal Convection**
16mm film, 11 min, color
Title No. 150857/HH $95.50

Explains the causes of the vertical air currents in the atmosphere and their relationship to changes in the weather.

BOMEX
16mm Film, 16 min, color, 1973
Producer USNOAA
Title No. 002004/HH $92.75

Describes the unique series of studies of the weather-making interaction between the tropical Atlantic Ocean and the atmosphere, made during the 1969 Barbados Oceanographic and Meteorogical Experiment.

Computing the Weather
16mm Film, 28 min, color, 1975
Producer USN
Title No. 008566/HH $162.50

Shows the background, methodology, and process of preparing numerical and oceanographic forecasts for the fleet as carried out by the Naval Weather Service at Monterey, CA.

Extreme Wind Study
16mm Film, 15 min, color, 1975
Producer USNBS
Title No. 009627/HH $87.00

Documents a research program of the National Bureau of Standards Center for Building Technology sponsored by the Agency for International Development which contributed to improved storm-resistant building design and construction principles. Presents the study's findings dealing with hurricanes, typhoons, and cyclones.

The Face of Disaster
16mm Film, 10 min, b/w, 1965
Producer USOCD
Title No. 315075/HH $33.00

Highlights natural disasters—the great Alaskan quake of 1964, the floods of 1965, and the devastation wrought on Palm Sunday, 1965, when 37 tornadoes boiled through the Middle East. Emphasizes the role of community welfare services in helping to meet these emergencies.

Flood
16mm Film, 16 min, color, 1971
Producer USESSA
Title No. 005583/HH $92.75

Describes the manner in which flood predictions are made. Portrays the basic precautions against the dangers and hardships imposed by floods. Shows the development and impact of floods caused by seasonal snow melting, hurricanes, and heavy rainstorms.

Neosho—April 24
16mm Film, 14 min, color
Producer USNOAP
Title No. 007755/HH $81.25

Presents the story of the devastating tornado of April 24, 1975 which struck the small Missouri city of Neosho. Documents the disaster preparedness planning of the community, which was responsible for the survival of those who were caught in the path of the tornado.

Cleared for TV.

A Hurricane Called Betsy
16mm Film, 29 min, b/w, 1966
Producer USOCD
Title No. 001875/HH $95.75

Tells the story of Hurricane Betsy. Describes the people who fought it, their victories, and their losses.

Hurricane & Tornado Preparedness
Slide Sets, color, Silent, 1976
Producer USCPS

■ **Hurricane Preparedness**
53 color slides with guide
Title No. 009656/HH $10.00

Shows hurricane frequency vulnerability and preparedness along the Gulf of Mexico and Atlantic coast of the contiguous U.S.

■ **Tornado Preparedness**
67 color slides with guide
Title No. 007866/HH $10.00

Provides statistics on tornadoes--types them by intensity and watch/warning capability—advocates community planning, safety drills, and tie-down legislation—and discusses the various warning dissemination systems. Shows some of the larger, more destructive tornadoes and the damage they caused to schools and mobile homes.

It Happened in Texas
16mm Film, 9 min, color, 1967
Producer USOCD
Title No. 002471/HH $52.25

Documents the September 1967 disaster in southern Texas, brought on by Hurricane Beulah and the tornadoes that followed in her wake.

A Lady Called Camille
16mm Film, 14 min, color, 1971
Producer USOCD
Title No. 010014/HH $81.25

Documents the devastation caused by Hurricane Camille and the suffering caused thousands of people. Shows that while hundreds of lives were lost to the hurricane, thousands were saved due to emergency plans, trained rescue teams, and help from volunteer groups and the military services.

Meteorology from Space
Sound Filmstrip, color, 22 min, audiotape, 1967
Producer USNASA
Title No. 002132/HH $12.50

Shows how Tiros photography of storm centers and cloud formations provides new knowledge about the weather.

A New Look at Fog
16mm Film, 13 min, color, 1967
Producer USFAA
Title No. 002594/HH $75.50

Explains how marginal weather caused by fog is being researched at the University of California Fog Test Chamber. Sponsored by the Federal Aviation Administration, the chamber is used primarily to test different lighting patterns for airport approach, runway, touchdown, and centerline locations. Reveals the initial findings of the new chamber including the recently authorized 1800 foot runway visual range visibility condition.

Pressure Systems and Wind
16mm Film, 19 min, color, 1963
Producer USA
Title No. 003111/HH $110.25

Depicts phenomena of pressure systems and wind flow and how they affect weather and flight conditions.

Rediscovery—A Series
5 16mm Films, color, 1973
Producer USNASA
Series No. 009843/HH $417.75

A series of five dramatic Earth science films about natural and man-made disasters, featuring NASA's contribution of providing vital information to reduce or prevent casualties and property loss.

■ **Hurricane Below**
16mm film, 14 min, color
Title No. 005756/HH $81.25

"Hurricane Below" presents the gripping story of the plight of a commercial fishing vessel, caught in the path of a "killer" hurricane. The film dramatically shows the birth of "Mimi" off the coast of Africa, carefully tracing its growth and development as it eventually brings destruction to the Central Atlantic States. These events are powerfully protrayed against the successful efforts of the crew of the dragger "Dante" to escape by navigating around the center of the storm with the aid of modern technology, ship-to-shore communications, and early warning weather satellites monitoring the "Hurricane Below."

■ **Tornado Below**
16mm film, 15 min, color
Title No. 009214/HH $87.00

The film involves a young female student pilot who almost gets caught in the path of a tornado on her first solo flight. The film explains how tornadoes are formed, their characteristics, and the destruction they cause. It also relates to work being done in the laboratory to better understand the dreaded phenomenon and the importance of information from early warning weather satellites in an attempt to reduce casualties from the "Tornado Below."

■ **Pollution Below**
16mm film, 14 min, color
Title No. 009583/HH $81.25

The film presents the stories of three people far apart, caught up in dangerous situations caused by unexpected pollution. Jacob Heath, who has just recovered from a heart attack, drives home after Thanksgiving dinner with his daughter's family and encounters a snow storm caused by smoke from nearby factories. Jimmy Howard, fishing with his father, learns that his first fish may be poisoned by an acid dump at sea. Tom McEwen, champion kayaker, safely navigates violent rapids and finds himself paddling in the peaceful but dangerously polluted Potomac. The threatening pollution of these three stories is seen through the eyes of NASA's satellite cameras, creating exciting images and colorful mosaics. The story is woven to a dramatic ending, each person a potential vicitm of the "Pollution Below."

■ **Earthquake Below**
16mm film, 15 min, color
Title No. 009470/HH $87.00

This film takes us to lovely San Francisco, a shining jewel of a city, that lives in constant threat of earthquake. Through a look back in time, we see how an earthquake shattered the San Francisco of 1906, and we experience the agony of a more recent earthquake in suburban Los Angeles. We learn how earthquakes are caused, and see the fault systems that are prime causes of earthquakes. San Francisco is serene and beautiful today, and yet we know what may happen at any time: the violence of the "Earthquake Below."

■ **Flood Below**
16mm film, 14 min, color
Title No. 009582/HH $81.25

Presents the story of two cowboys, Cal and Pete, threatened as a flash flood thunders into the valley of their Rocky Mountain ranch. They remember how a similar flood once nearly destroyed a town where they were stationed in the Army and that the agony from earlier floods has yielded information to help save many areas from future flood damage. Today, however, the ranch of Cal and Pete is in the direct path of the "Flood Below."

The Safest Places in Schools
Slide Set, 14 color slides with guide
Producer USNWS
Title No. 009605/HH $18.50

Discusses how studies of tornado damage from the Gulf of Mexico to Canada reveal definite patterns in tornado behavior and building reactions to high winds. Shows that the safest places in schools can be determined before tornadoes strike.

Story of a Storm
16mm Film, 29 min, color, 1972
Producer USN
Title No. 005254/HH $168.25

Describes how the Navy Weather Service helps Navy and cargo ships avoid adverse weather conditions.

Survival in the Winter Storm
16mm Film, 27 min, color, 1974
Producer USDCPA
Title No. 007202/HH $156.50

Deals with the dangers inherent in winter weather. Gives advice to the average citizen on how to prepare for severe weather conditions, explains the meanings of specific forecasts, and points up the necessity for emergency planning by local governments.

Tornado
16mm Film, 15 min, color, 1968
Producer USESSA
Title No. 003686/HH $87.00

Tells the story of a typical Midwestern city that lies in the path of a tornado. Shows scenes of a tornado in action and protective preparations. Describes weather conditions which generate tornadoes and discusses the Environmental Science Services Administration's methods of charting conditions and issuing warnings to the public.

Weather Eye
16mm Film, 29 min, color, 1974
Producer USN
Title No. 005891/HH $168.25

Looks at the duties performed by an aerographers mate after leaving school and being assigned to one of the many duty stations with the Naval Weather Service.

Rental and Purchase Policies

How to Order

The government films, slide sets, and other audiovisual materials listed in this catalog are distributed by the National AudioVisual Center.

Address all orders to:

National AudioVisual Center
National Archives and Records Service
General Services Administration
Order Section HH
Washington, DC 20409
(301) 763-1891

Please help us fill your order promptly and accurately by providing the title number and title; specify quantities if a purchase, or show dates if a rental.

Also, provide the name and phone number of the individual we can contact if it is necessary for the Center to clarify your order.

For invoicing, an official purchase order or letter on organizational letterhead is required.

For direct payment, make all checks payable to: National Archives Trust Fund (NAC)

Special handling or additional shipping charges must be paid by the user.

Purchase

Price and delivery
All materials listed in this catalog are offered for sale at the net prices indicated, F.O.B. destination. Prices are subject to change without notice.

Acknowledgment
Orders will be shipped as quickly as possible. If delayed, you will be notified of the shipping date and your order identification number. Please use this number in all references to the order.

Returns
Purchased items may not be returned for replacement or credit without the Center's prior approval. Please call or write us for instructions within 21 days from date of receipt.

Rental

8mm films only
Films from the Center's library may be rented at the charges shown below. Please indicate first and second choices of play dates.

Film Rental Rates
Three Day Period*

Minutes	B/W	Color
1-33	$10.00	$12.50
34-44	12.50	15.00
45-55	15.00	17.50
56-66	17.50	20.00
67-77	20.00	22.50
78-88	22.50	25.00
89-99	25.00	27.50

*Extra Days

1 week	1½ times rate
2 weeks	2 times rate
4 weeks	3 times rate

Booking procedures
Please schedule rentals as far in advance as possible and list alternate play dates; or indicate if you will accept the film on the first available date.
Confirmation will be sent with title and booking date.
Cancellations must be received a week before our shipping date or the 3-day rental rate will be charged.

Film shipment
We assume the cost of mailing the rental print; if necessary you must pay the return shipping cost and for materials lost or damaged while in your possession. Films should be rewound after use and returned on *our* reels in *our* shipping cases.

Rental applies to purchase
The most recent rental fee may be applied to the purchase price within 90 days of the rental invoice date. Please cite the booking notice number or the customer order number on the purchase request.

Orders From Foreign Countries

Purchase
Advance payment in U.S. currency is required for all orders from foreign countries. Sorry, *letters of credit are not accepted.* Payment must be made by check drawn on an American bank (FDIC member) or by international money order. A proforma invoice can be provided.

Rentals
Subject to the above requirements, rental requests from outside the continental United States will be filled whenever possible.

Shipping
Foreign users must pay all shipping charges. Indicate the method of shipment desired when requesting a proforma invoice.

Preview Prints

Free Preview of 16mm motion pictures will be provided to qualified customers when prints are available. If the Center does not have a preview print of the requested title, we will make every effort to refer you to a loan or rental source.

Be fair, please don't ask for preview unless you are authorized to buy and have funds for purchase.

(Preview service is not available for rentals or for materials other than 16mm motion pictures.)

Replacement Footage

Replacement footage may be ordered to replace damaged portions of previously purchased motion pictures. Please specify the exact number of running feet needed. Measure either from the first frame of the main title or from the last frame of the end title, indicating the method used. Most replacement footage will be charged at the following rates:

35¢ per ft. ($17.50 minimum order per section) for color
25¢ per ft. ($12.50 minimum order per section) for b/w

Prices for other replacement materials are available upon request.

Videocassette and Super 8mm

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USHRAC	Office of Communications, Health Resources Administration
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USOSWM	Office of Solid Waste Management, Environmental Protection Agency
USPHS	Public Health Service
USPOST	United States Postal Service
USSCPW	Committee on Public Works, United States Senate
USTID	Technology Utilization Office, National Aeronautics and Space Administration
USUPD	Urban Planning Division, Federal Highway Administration
USVA	Veterans Administration
USWD	War Department

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